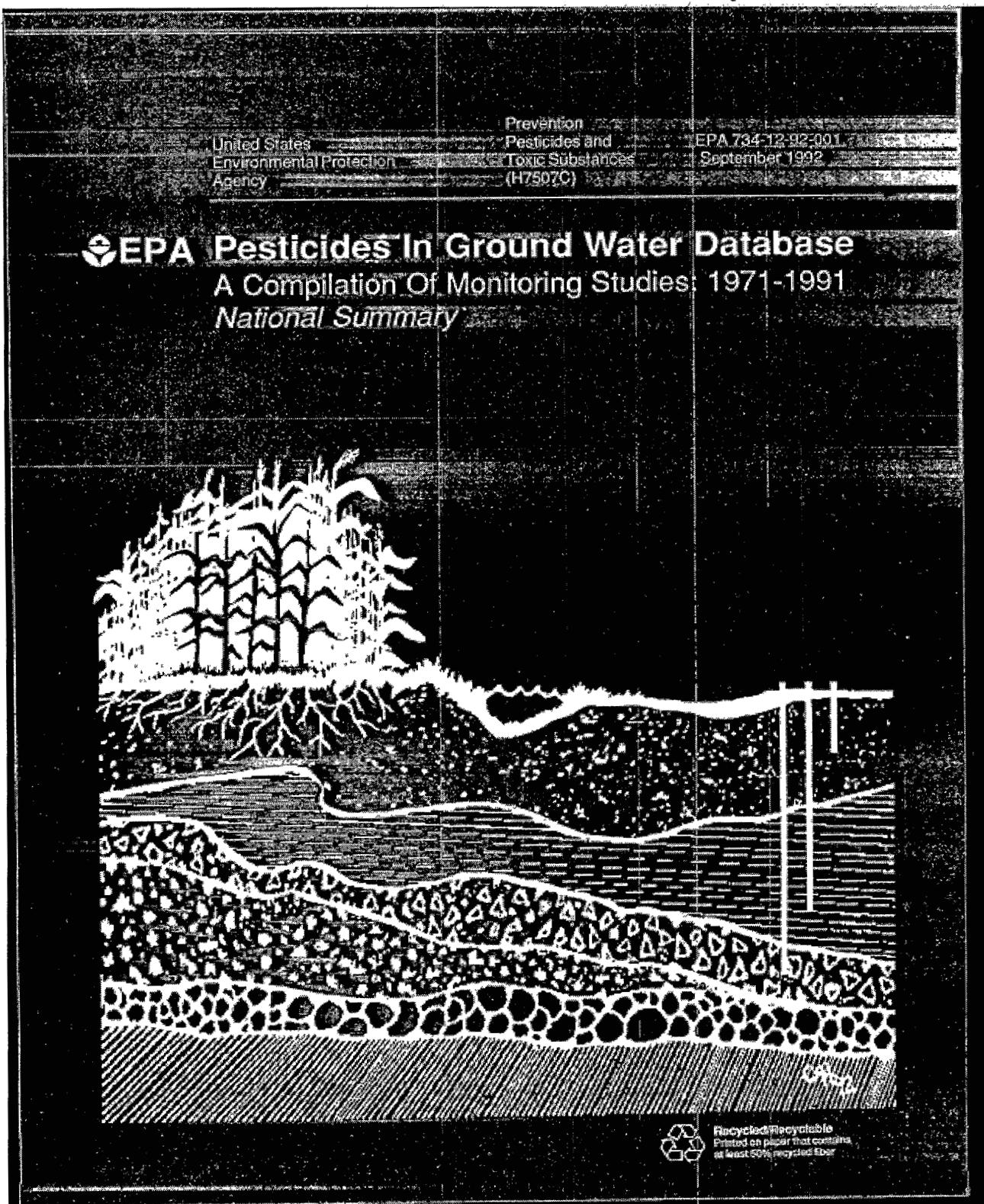


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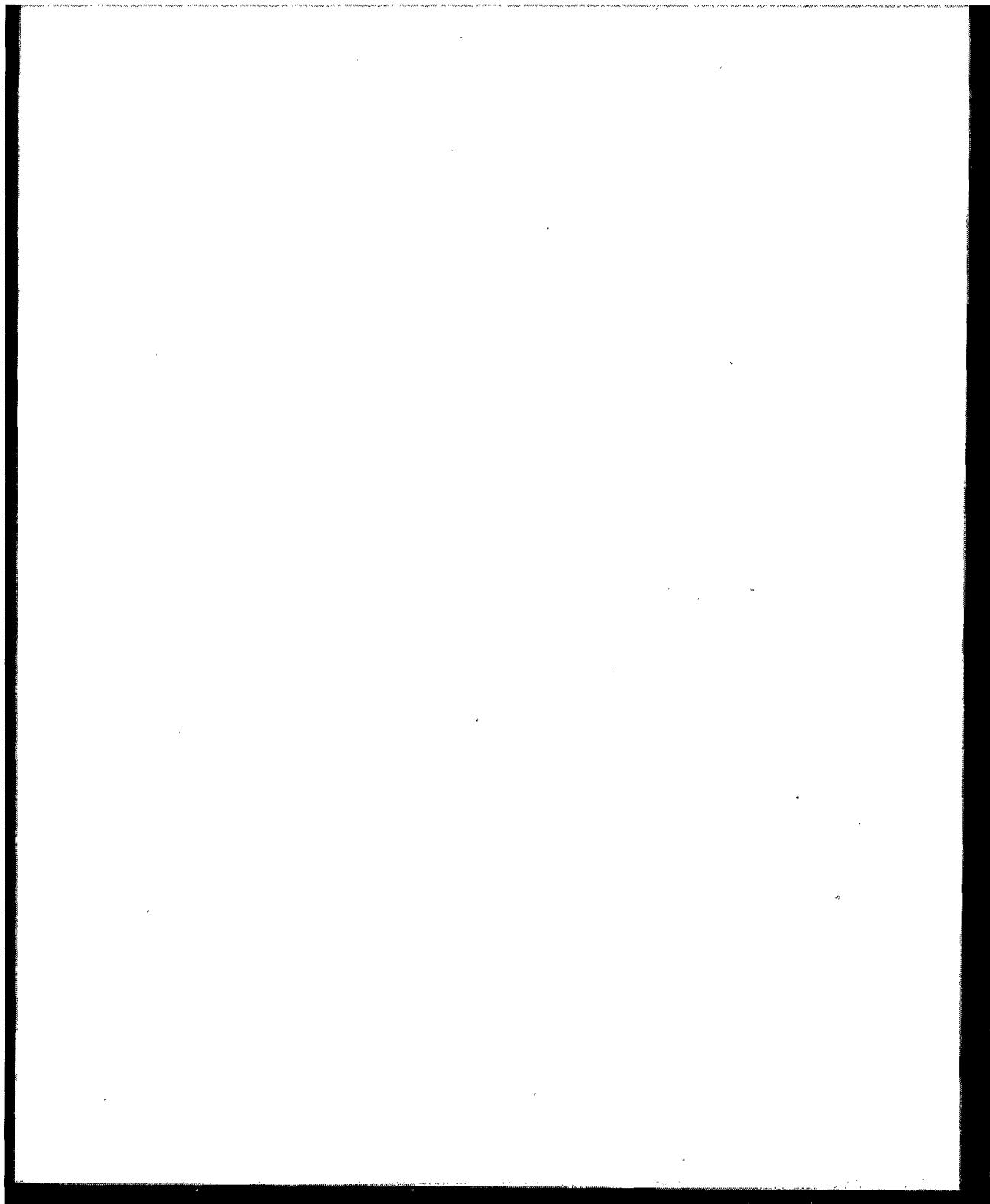
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Pesticides in Ground Water Database - 1992 Report**ERRATA**

<u>VOLUME</u>	<u>PAGE</u>	<u>COMMENTS</u>
All Volumes	APPENDIX I-4	Regulatory status for chloroform is given as SR*. it should be C,SR*.
	APPENDIX I-15	add: MR Not Registered for use in the United States
National Summary	MS-125	Glyphosate: VA "RANGE OF CONCENTRATIONS" should be changed from 0.004-0.009 to <700. TOTAL DISCRETE WELLS "RANGE OF CONCENTRATIONS" should be changed from 0.004-150.0 to 150.0.
	MS-98	Cycloate: VA "# OF POSITIVE WELLS < MCL" should be changed from 7 to 0, "RANGE OF CONCENTRATIONS" should be changed from 0.2-1.8 to blank; TOTAL DISCRETE WELLS "# OF POSITIVE WELLS < MCL" should be changed from 7 to 0, "RANGE OF CONCENTRATIONS" should be changed from 0.2-1.8 to blank.
	MS-81	Bentazon: VA "WELLS >MCL" should be changed from 1 to 0, "WELLS <MCL" should be changed from 10 to 5, "RANGE OF CONCENTRATIONS" should change to 0.07-0.547.
		Bentazon: TOTAL DISCRETE WELLS: "WELLS >MCL" should change from 3 to 1, "WELLS <MCL" should change from 78 to 73, "RANGE OF CONCENTRATIONS" SHOULD CHANGE TO 0.07-20.0.
	MS-160	Sethoxydim: add a row: VA 1986-87 8 0 3 2,10-41.89
		TOTAL DISCRETE WELLS : "TOTAL WELLS SAMPLED" should be changed from 65 to 73, "<MCL" should be changed from 0 to 3, "RANGE OF CONCENTRATIONS" should be 2,10-41.89.
Region 3	3-VA-7	The location of the study Watershed/Water Quality Monitoring For Evaluating BMP Effectiveness was erroneously referred to as the "Westmoreland Water Shed". The correct location is the Nomini Creek Watershed.
	3-VA-19	Glyphosate: TOTAL DISCRETE WELLS/SAMPLES "TOTAL # SAMPLES" should be changed from 100 to 60 and "RANGE OF CONCENTRATIONS" should be changed from 0.004-0.009 to <700.
	3-VA-27	The TOTAL value for NFU is given as 155, this value should be 147.

ERRATA - 1

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Pesticides in Ground Water Database - 1992 Report

ERRATA

3-VA-13 & 3-
VA-14 3-VA-27

Pesticide Table - Bentazon information should be amended as shown in following table. Sethoxydim information as shown should be added.

Wells Table - The monitoring well information for Westmoreland County and Total should be amended. <MCL should be change from 6 to 7, <MCL should be changed from 2 to 1 for both the Westmoreland County and the Total rows.

PESTICIDE SAMPLING IN THE STATE OF VIRGINIA

PESTICIDE	COUNTY	DATE	WELL RESULTS		SAMPLE RESULTS		RANGE OF CONCENTRATIONS (ppb)		
			TOTAL WELLS SAMPLERED	% OF POSITIVE WELLS	TOTAL # OF SAMPLES	% OF POSITIVE SAMPLES			
		YEAR/ MONTH	# MCL	# MOL	# MOL	# MCL			
Bentazon	WESTMORELAND	1986/1-4	4	0	1	16	0	1	0.450
		1987/4-6	8	0	2	24	0	2	0.07-0.08
		1987/7-12	8	0	1	56	0	1	0.35
		1988/1-5	8	0	1	32	0	1	0.28
		1988/6-12	8	0	0	40	0	0	
		1989/1-6	8	0	3	56	0	3	0.186-0.417
		1989/7-12	8	0	0	48	0	0	
		1990/1-5	8	0	1	56	0	1	0.547
		1990/7-12	8	0	1	48	0	1	0.364
TOTAL DISCRETE WELLS/SAMPLES			12	0	5	432	0	10	0.07-0.547
>Sethoxydim	WESTMORELAND	1986/6-7	8	0	1	16	0	1	41.89
		1986/9-11	8	0	1	24	0	1	4.07
		1987/1-3	8	0	1	40	0	1	2.10
TOTAL DISCRETE WELLS/SAMPLES			8	0	3	80	0	3	2.10-41.89

VOLUME	PAGE	COMMENTS
Region 4	Florida Sampling dates	Some of the dates in the Florida database (i.e. 1909) are obvious errors. These dates are listed in this document as they were provided, the true dates could not be determined.

ERRATA - 2

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Pesticides in Ground Water Database - 1992 Report

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VOLUME	PAGE	COMMENTS
Region 8	-----	The State of South Dakota has additional data that is not presented in this report. Contact Jeanne Goodman, South Dakota Department of Environment and Natural Resources, Tel: 605-773-3296.
Region 9	OV-14	OV-14 REGIONAL MAP: The TOTAL NUMBER OF WELLS SAMPLED for Arizona is given as 36, this value should be 40.
Region 10	10-WA-12	Cycloate "Total Discrete Wells/Samples" should be changed from 7 to 9 in "# OF POSITIVE WELLS < MCL", from 16 to 9 in "NUMBER OF POSITIVE SAMPLES < MCL", and for 0.2-1.08 to blank in "RANGE OF CONCENTRATIONS".
Region 2	Various	The table below reflects changes to the data for Kansas, based upon review of additional data. These totals carry into the "Region" volume as well.

National Summary

CORRECTIONS TO NATIONAL SUMMARY DOCUMENT RELATED TO KANSAS

PESTICIDE	PAGE IN NATIONAL SUMMARY DOCUMENT	STATE NAME	DATE	WELL RESULTS		RANGE OF CONCENTRATIONS (ppm)
				TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	
Zeta-cide	NS-62	KS	1984-87		25	TR-22
Aldrinector	NS-108	KS			1	0.88-6.2
Alachlor	NS-170	TOTAL			98	
Atrazine	NS-74	KS				0.1-40
Catrolfene	NS-90	KS			2	
Chlordane	NS-91	TOTAL			6	
Dieldrin	NS-103	KS				0.32-0.36
Etidoseulfan 1	NS-115	KS				0.033-0.062
Etidoseulfan 3	NS-116	TOTAL				0.033-0.062
Heptachlor Epoxide	NS-124	KS				0.023-0.026
Oktoprim	NS-152	KS			2	3.3-5.6

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Pesticides in Ground Water Database - 1992 Report

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PESTICIDE	PAGE IN NATIONAL SUMMARY DOCUMENT	ROW NUMBER	DATE	WELL RESULTS		RANGE OF CONCEN. TRROLES (PPM)
				TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	
Picloram	NS-153	TOTAL				75
Trifluralin	NS-160	15			1 2	2.7-5.4
GRAND TOTAL	NS-173			214	7 33	

PAGE IN NATIONAL SUMMARY DOCUMENT	ROW NUMBER	TYPES OF WELLS												NUMBER OF CONTAMINATED WELLS (BY WELL USE)		
		DRINKING WATER			MONITORING			OTHER								
		TOTAL SAMPLES	% NC	% PC	TOTAL SAMPLES	% NC	% PC	TOTAL SAMPLES	% NC	% PC	NUC	PC	UNK	NUC	PC	UNK
NS-175	Kansas			30							49		0			
NS-174	Total			5997							13771		2636			

New errata as of Dec 23, 1993 are underlined

ERRATA - 4

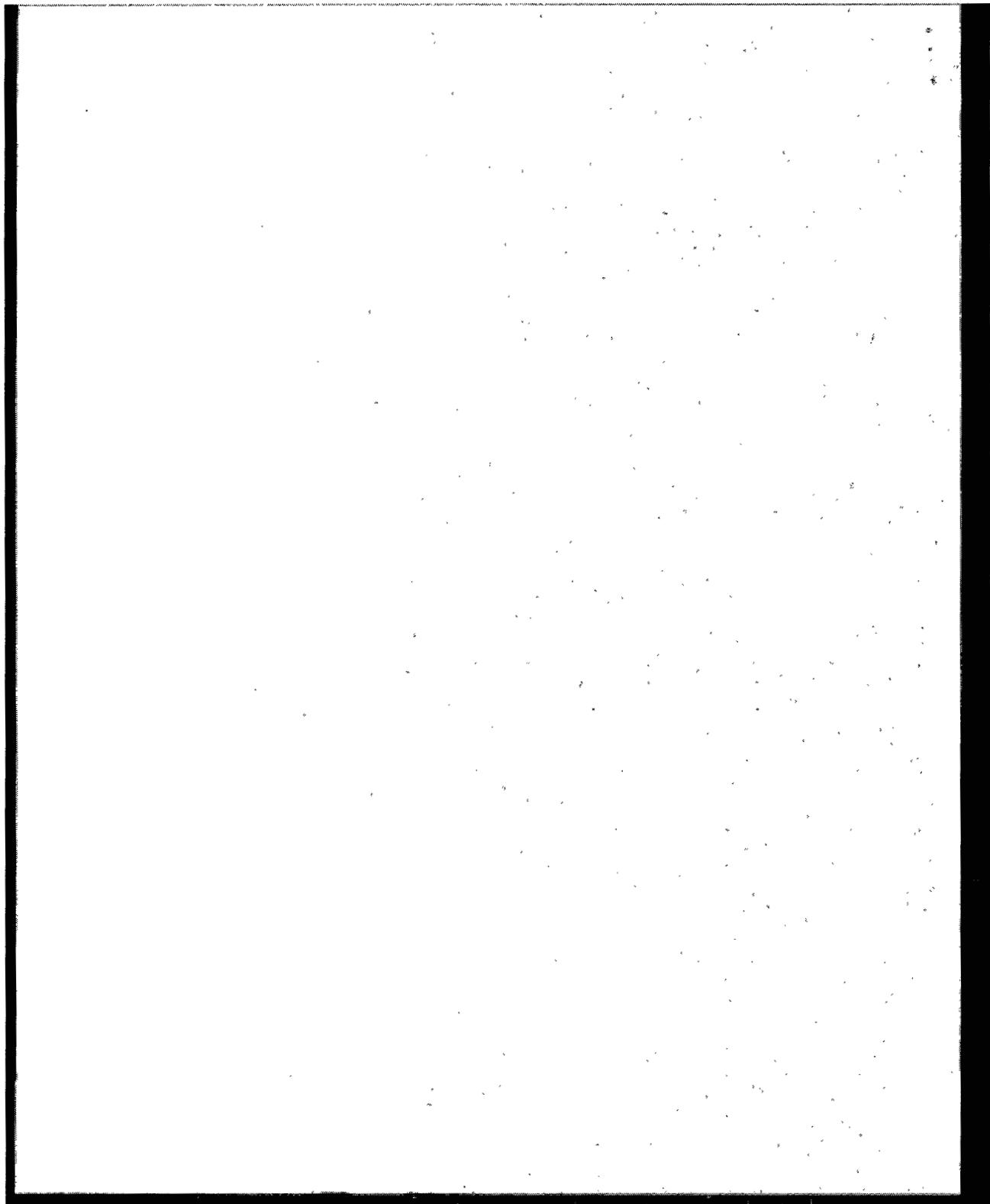
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*Pesticides in Ground Water Database - 1992 Report***ERRATA**

<u>VOLUME</u>	<u>PAGE</u>	<u>COMMENTS</u>
Region 9	9-CA-321 to 9-CA-331	The *'s following the lindane data, which note that the pesticide has no MCL or HA, are erroneous. Lindane has an MCL of 0.2 µg/L.
	9-CA-327	For SAN DIEGO COUNTY, 1987: The "1" in # OF POSITIVE WELLS < MCL should be moved to the # OF POSITIVE WELLS ≥ MCL column. The "1" in NUMBER OF POSITIVE SAMPLES < MCL should be moved to the NUMBER OF POSITIVE SAMPLES ≥ MCL column.
	9-CA-331	TOTAL DISCRETE WELLS OR SAMPLES: The "1" in # OF POSITIVE WELLS < MCL should be moved to the # OF POSITIVE WELLS ≥ MCL column. The "1" in NUMBER OF POSITIVE SAMPLES < MCL should be moved to the NUMBER OF POSITIVE SAMPLES ≥ MCL column.
Region 4, Volume 1	4-SC-9	To the Lindane/HAMPTON COUNTY and TOTAL DISCRETE WELLS/SAMPLES rows, the RANGE OF CONCENTRATIONS column place a superscript A after the 0.01-0.319.
	4-SC-10	Add underneath table: ^ In this report the results of monitoring were given as a range of concentrations. It was not possible to determine how many of the detections were above the lindane MCL of 0.2 µg/L; therefore, all detections were placed in the < MCL column.
National Summary	NS-129	For lindane in CALIFORNIA: The "1" WELL < MCL should be moved to the WELLS ≥ MCL column.
	NS-130	For lindane TOTAL DISCRETE WELLS: The WELLS ≥ MCL should be changed from 2 to 3; the WELLS < MCL should be changed from 76 to 75.

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Pesticides in Ground Water Database - 1992 Report

**Pesticides in Ground Water Database
A Compilation of Monitoring Studies: 1971 - 1991
National Summary**

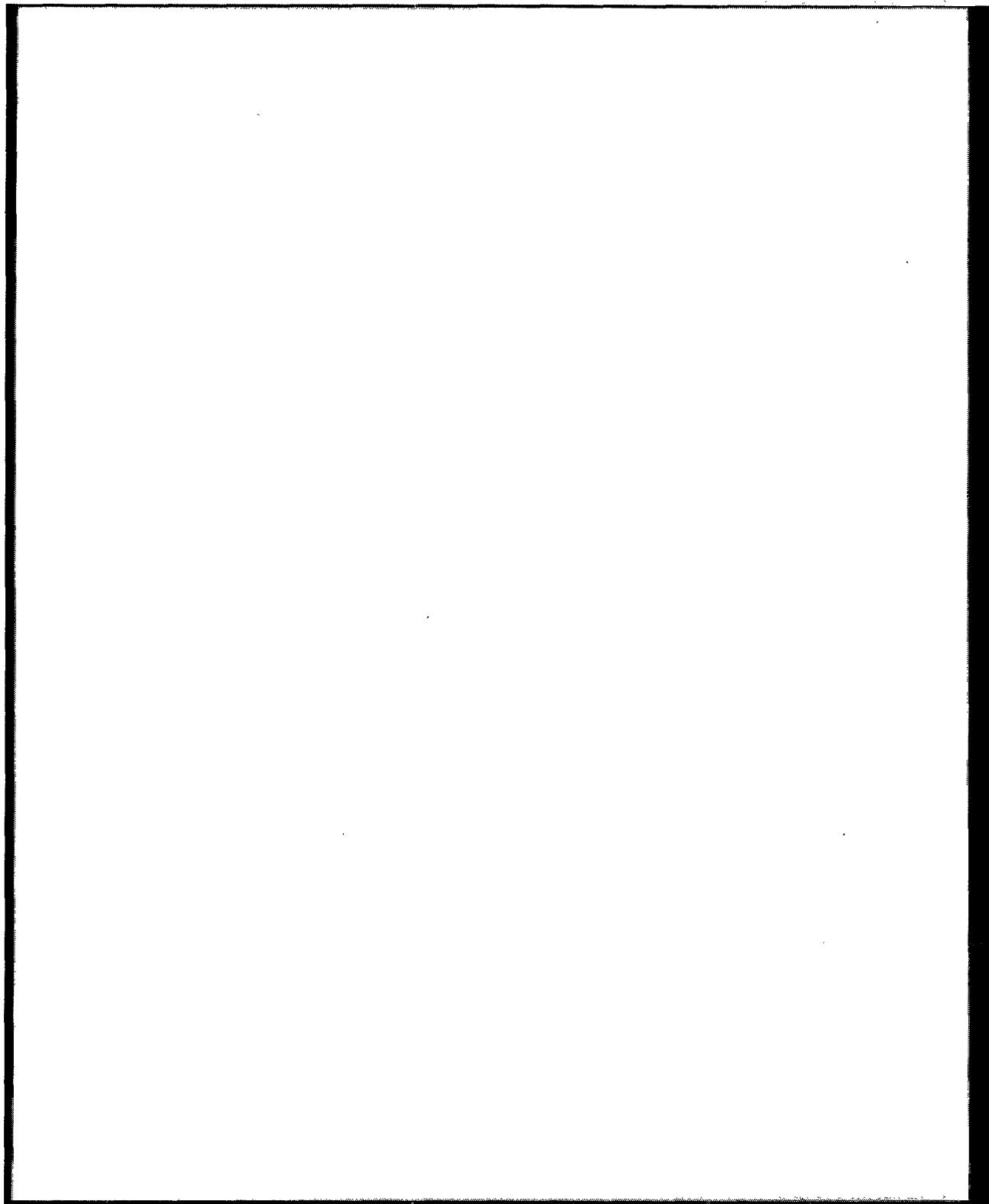
Office of Pesticide Programs
Environmental Fate and Effects Division
Environmental Fate and Ground Water Branch
Henry Jacoby, Chief

Pesticide Monitoring Program Section
Constance Hoheisel
Joan Karric Susan Lees
Leslie Davies-Hilliard Patrick Hannon
Roy Bingham

Ground Water Technology Section
Elizabeth Behl
David Wells Estella Waldman

September 1992

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Pesticides in Ground Water Database - 1992 Report

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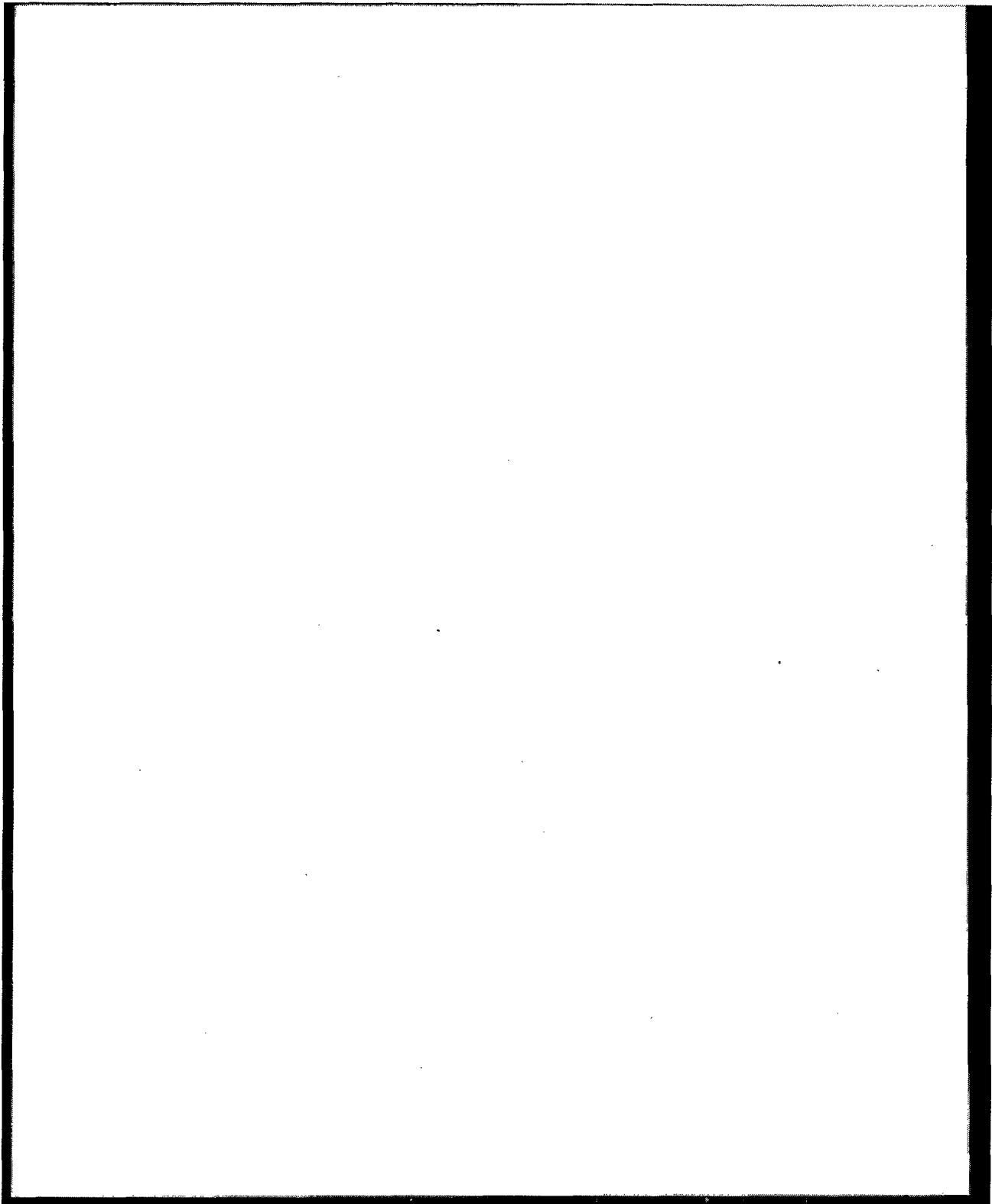
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Pesticides in Ground Water Database - 1992 Report, National Summary

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Pesticide Cross-Reference Table	Appendix I-1
National Survey of Pesticides in Drinking Water Wells	Appendix II-1

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INTRODUCTION AND OVERVIEW

I. INTRODUCTION

The U.S. Environmental Protection Agency/Office of Pesticide Programs (EPA/OPP) is responsible for protecting human and environmental health from unreasonable risk due to pesticide exposure. Monitoring efforts carried out during the last decade have shown that the nation's ground water can become contaminated with pesticides, particularly in areas with high pesticide use and vulnerable aquifers. Therefore, OPP has taken a strong preventive approach to the protection of this valuable resource. Regulatory activities have evolved to include, as a condition of registration or re-registration, a more rigorous evaluation of a pesticide's potential to reach ground water. OPP has also formed strong partnerships with other federal and state agencies responsible for various aspects of ground-water protection.

The Pesticides in Ground Water Database (PGWDB) was created to provide a more complete picture of ground-water monitoring for pesticides in the United States. It is a collection of ground-water monitoring studies conducted by federal, state and local governments, the pesticide industry and private institutions. It consists of monitoring data and auxiliary information in both computerized and hard-copy form. This report, *Pesticides in Ground Water Database -- A Compilation of Monitoring Studies: 1971 - 1991*, was prepared to summarize and share the results of the studies in the PGWDB. It consists of 11 volumes: a National Summary and ten EPA regional summaries. Each volume provides a detailed description of the computerized PGWDB and a guide to reading and interpreting the data. The data are presented as maps, graphs and tables.

These data are extremely valuable, but must be interpreted carefully. In general, the PGWDB provides an overview of the ground-water monitoring efforts for pesticides in the United States, the pesticides that are being found in the nation's ground water, and the areas of the country that appear to be vulnerable to pesticide contamination.

When viewed as a whole, it might appear the data gathered for this report are representative of the United States and/or of general drinking water quality. This is not necessarily the case. For example, many studies included sampling of aquifers that supply drinking water, however these samples were usually taken at the well, not at the consumer's tap. Therefore, conclusions concerning finished water can only be drawn by careful examination of the data on a study by study basis. In addition, ground-water monitoring programs vary widely in sampling intensity and design from state to state. Not surprisingly, the states that sampled the greatest number of wells were often those that found the greatest number of contaminated wells. This should not be misconstrued to mean that the ground water in these states is more contaminated than that of other states, or that all ground water in these states is contaminated. On the contrary, an active, supported sampling program generally indicates a high regard for ground-water quality.

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The database and this report are the result of the efforts of a great many individuals, significant among whom are the state officials and principal investigators who gave generously of their time to provide OPP with information concerning their work. In publishing this report, OPP intends not only to provide data, but also to identify points of contact, in order to share expertise among those responsible for the protection of the nation's ground-water resources.

To make this information available to as many decision makers in state and other federal agencies as possible, the computerized portion of the PGWDB will become a part of the Pesticide Information Network (PIN).¹ The PIN is a computerized collection of files that contain pesticide monitoring and regulatory information. The PIN functions much like a PC-PC bulletin board and can be accessed by anyone with a computer and a modem. The PIN is currently undergoing an expansion that will allow new types of information to be included and increase the number of simultaneous users. The new PIN will be available in 1993 and will contain the PGWDB, environmental fate chemical/physical parameters for pesticides, pesticide regulatory information (Restricted Use, Special Review, canceled and suspended) and a certification and training bibliography.

II. THE ROLE OF PESTICIDE MONITORING

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires EPA to monitor the environment for pesticide residues [section 20, parts (b) and (c)]. The primary goal of pesticide monitoring is to improve the soundness of FIFRA risk/benefit regulatory decisions by providing information on the concentrations of pesticide residues and the effects that exposure to these residues have on human health and the environment. In addition, long-term changes in environmental quality can be detected through the analysis of monitoring data. OPP can use this information to measure the effectiveness of regulatory decisions and to indicate potential environmental problems.

EPA has directly sponsored some large-scale pesticide monitoring projects, such as the National Monitoring Programs of the 1970s² and the recent National Survey of Pesticides in Drinking Water Wells.³ This type of monitoring is intended to provide information on a national level involving large numbers of pesticides. It does not provide information concerning localized problems or long-term trends. This method of data gathering is also extremely resource-intensive. An alternative approach for OPP is to support and gather information from monitoring studies performed by others. Since the responsibility for protecting the nation's ground water is shared by federal and state governments, OPP's data-handling responsibilities not only include procuring the most current information for its own needs, but also sharing this information with its partners in state and federal agencies. The development of the Pesticides in Ground Water Database is a step in this direction.

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III. BACKGROUND

OPP began collecting ground-water studies for the PGWDB in the early 1980s. In 1988, an effort was made to review and catalog these data. Summary results of this effort were computerized and then published in the *Pesticides in Ground Water Database: 1988 Interim Report*.⁴

Since the 1988 Interim Report was issued, many things have changed. State-sponsored projects, initiated in the late 1980s, have been completed and digitized, monitoring methodologies and computer technology have improved, and the quality and quantity of data have increased. Based on extensive use of the 1988 database by OPP's Ground Water Technology Section and the comments received from other users, both within and outside of OPP, the computerized database and the hard-copy report were restructured. The new computerized structure is more appropriate for the quality and quantity of the information currently available, as well as for that expected in the future. The new structure is both well and sample specific; that is, it contains description and location information for each well sampled and the results of each analysis. This structure allows ground-water monitoring data to be sorted in a variety of ways, such as by well depth, well location, and sampling date. The new report structure provides national, regional, state and county summaries so that readers can select the resolution appropriate for their needs.

Most of the data in the PGWDB have been produced directly by state agencies or by private institutions that are sponsored by federal or state agencies. Some pesticide industry-sponsored studies have also been included in the PGWDB. These studies were conducted to support the registration status of a particular pesticide and were generally conducted in areas that are vulnerable to ground-water contamination by pesticides.

The database is a compilation of data submitted in several different formats, including computerized and hard-copy sampling results as well as hard-copy reports containing study descriptions and summary information. Many states are now routinely storing their data in computerized form and have shared their data with OPP. Some of the hard-copy data are from older studies that were never computerized. Some are from studies that have been computerized, but OPP has not yet been able to obtain the data. OPP is also retaining hard-copy final reports for as many studies as possible. These reports provide vital information such as study design, well design, analytical methods, quality control and environmental conditions.

The focus of the PGWDB is quite narrow. It contains only ground-water monitoring data in which pesticides were included as analytes. Therefore, the PGWDB does not replicate STORET⁵ or WATSTORE⁶. While these large databases contain some pesticide monitoring data and some ground-water data, their primary focus is general water quality. As a result, these databases contain a great deal more information about water quality, but lack many of the pesticide focused studies that are included in the PGWDB. Many states have used STORET to store water-quality data, including analyses for pesticides. STORET data were downloaded and added to the PGWDB when the data could be directly

VI. DATA INTERPRETATION

Ground-water monitoring data in this report have been assembled from numerous sources, including state and federal agencies, chemical companies, consulting firms, and private institutions that are investigating the potential for ground-water contamination by pesticides. These data are extremely valuable, but must be interpreted carefully. In general, the PGWDB provides a relatively comprehensive overview of the ground-water monitoring efforts for pesticides in the United States, the pesticides that are being found in the nation's ground water, and the areas of the country that appear to be the most vulnerable to pesticide contamination.

Nationally, part of OPP's regulatory mission is to prevent contamination of ground-water resources resulting from the normal use of registered pesticides. OPP routinely reassesses the impact that registered pesticides have on the quality of ground-water resources. The PGWDB will be used to support ongoing regulatory activities, such as ground-water label advisories, monitoring studies required for pesticide re-registration and special review activities. In addition, combining the information in the PGWDB with other environmental fate data and usage data will assist OPP, at an early stage in the regulatory process, in refining criteria used to identify pesticides that tend to leach to ground water.

On a state or local level, the PGWDB can be used as a reference so that a state may access data from neighboring states. Evidence that pesticide residues occur in ground water can be used to target a state's resources for future monitoring and to re-assess pesticide management practices to prevent future degradation of ground-water quality. The information presented in this report will also be useful to state and regional agencies when implementing two pollution-prevention measures being developed by EPA; the *Restricted Use Rule* and the *State Management Plans* outlined in the *Pesticides and Ground Water Strategy*. Additional uses for the data in the PGWDB include identification of areas in need of further study, identification of the intensity of monitoring for particular pesticides, and graphic display of ground-water monitoring activities and localization of pesticide contamination.

VII. DATA LIMITATIONS

Despite their apparent value, these data do have limitations and must be used and interpreted carefully. Differences in study design, laboratory procedures/equipment, sampling practices, or well use can affect results. Some of the limitations governing the interpretation of the data in the PGWDB are discussed below:

- 1) The PGWDB is not a complete data set of all ground-water monitoring for pesticides in the United States. While we have attempted to include as many sources as possible, other data exist of which we are not aware or to which we do not yet have access.

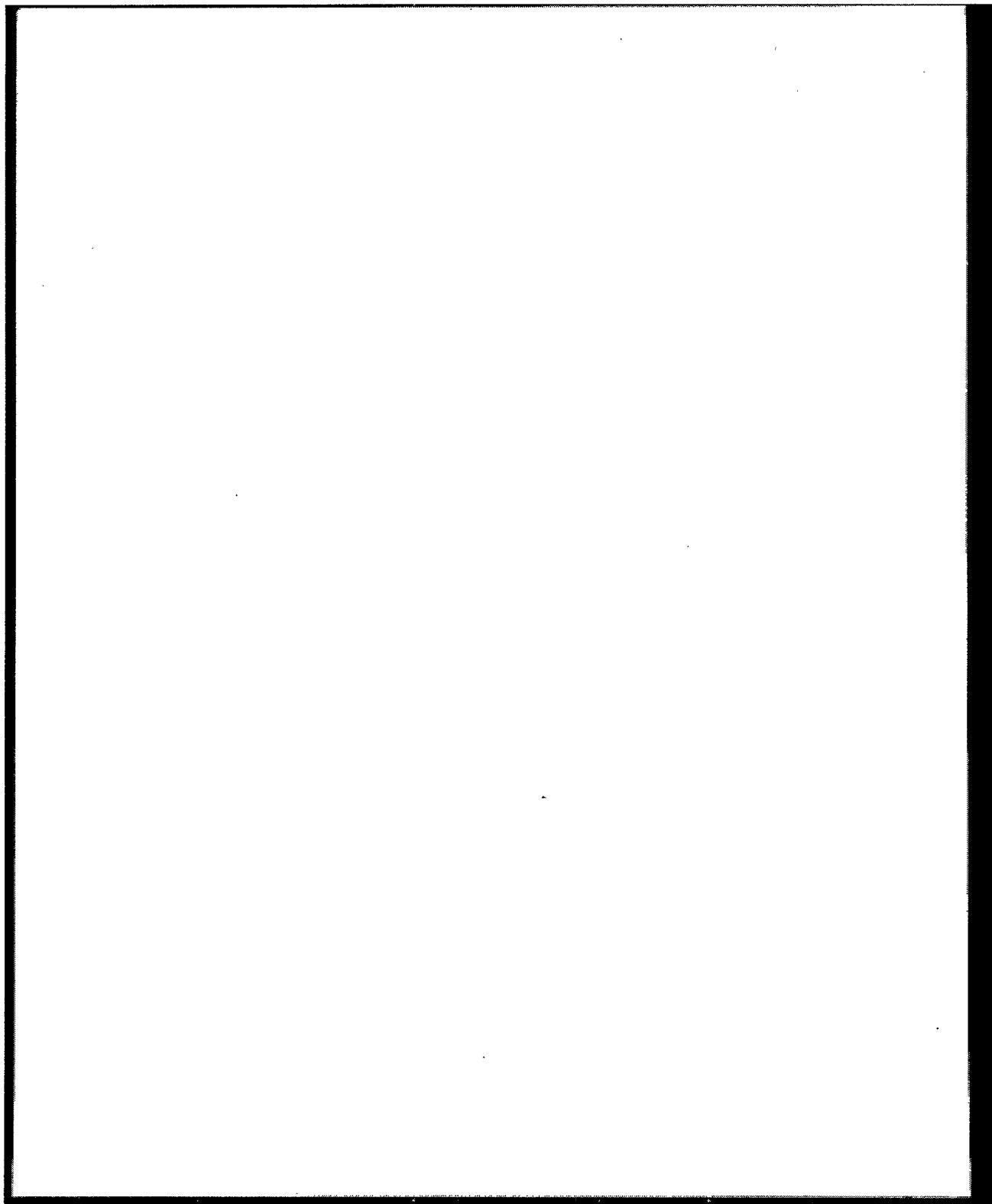
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- 2) Monitoring for pesticides in ground water has not been performed in a uniform manner throughout the United States. Some states have extensive monitoring programs for pesticide residues, while others have more limited monitoring programs. In general, more extensive ground-water monitoring programs tend to be found in the states where pesticide use is heavy. This creates a picture that does not necessarily represent the overall impact of pesticides on ground-water quality nationwide.
- 3) Differences in ground-water monitoring study design can radically affect the results. Many monitoring efforts were initiated in response to suspected problems, and therefore yielded a disproportionately high number of positive samples. These results cannot be extrapolated to represent a larger region or state. Other efforts sampled a small number of wells or sampled under conditions in which contamination was unlikely. Still others were statistically designed studies, intended to be extrapolated to a specific population of wells. Each of these scenarios presents a vastly different view of the condition of the ground-water resource sampled.
- 4) Analytical methods and limits of detection have changed over time, and also vary from laboratory to laboratory. Therefore, comparisons between the results of different studies and across several years must be performed carefully to avoid errors in interpretation.
- 5) Differences in construction, depth, location and intended use can greatly affect the likelihood that a particular well will become contaminated by pesticides. Some of these issues were addressed in the individual study summaries when such details were available. However, this information was not always provided and tends to be obscured when large amounts of data are summarized. The reader is cautioned to read the study summaries carefully and interpret the resulting data summaries conservatively.

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NATIONAL SUMMARY

I. INTRODUCTION

This section provides a summary of ground-water sampling for pesticides in the United States. The data in this report represent sampling that occurred from 1971 to 1991; most sampling was performed during the 1980s. A summary of all data collected is presented by state and pesticide. This information can be found as maps, graphs and tables beginning on page NS-9. More detailed information for each state and descriptions of the studies from which these data were derived are available in the regional volumes.

II. RESULTS

The Pesticides in Ground Water Database currently contains data collected from 68,824 wells in 45 states. The vast majority of these were drinking water wells (65,865). Pesticide (or pesticide degradate) residues have been detected in 16,606 wells (15,502 drinking water wells) in 42 states. Nearly 10,000 of these contaminated wells had concentrations of pesticides or degradates greater than EPA drinking water standards (MCL or Lifetime HA). Figure 4 lists the states with the most intense sampling and the greatest number of detections.

During the 20-year period covered in this report, ground water in the United States was analyzed for the presence of 302 pesticide-related compounds. One hundred thirty-two were detected and 35 were detected at concentrations \geq MCL or Lifetime HA. The following list provides more details: (Note that 4-Nitrophenol is both a registered parent pesticide and a degradate of methyl parathion. This compound was counted in both categories.)

<u>Total number of analytes</u>	<u>Found in at least one well</u>
302 pesticide-related compounds	132 pesticide-related compounds
258 parent pesticides	117 parent pesticides
45 degradates	16 degradates

<u>Found in 100 or more wells</u>	<u>Found in over 1,000 wells</u>
23 pesticide-related compounds	7 pesticide-related compounds
21 parent pesticides	5 parent pesticides
2 degradates	2 degradates

Regulatory restrictions have been placed on 54 of the pesticides found in ground water: 28 are no longer registered for use in the United States and 27 of those with active registrations are designated as restricted use. An additional 6 pesticides have not been supported by the registrant for re-registration. Thirty-four of the pesticides found in ground water are or have been in the Special Review process.

Figure 5 lists the pesticide-related compounds detected in more than 100 wells in order of number of wells with detections. The two most-often-detected pesticide compounds were the degradates aldicarb sulfone and aldicarb sulfoxide. These degradates were found more frequently than the parent compound, aldicarb. Figure 6 lists the 11 pesticide parents and

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their 16 degradates that had at least one degradate detected. DCPA acid metabolites, the third-most frequently detected degradate group in the PGWDB, were also detected more frequently than the parent, DCPA, and were the most frequently found of all pesticide analytes in the National Pesticide Survey of Drinking Water Wells (NPS) (see Appendix II).

In most cases, degradates have only recently been included as analytes in ground-water monitoring studies and far fewer wells have been sampled for the presence of these compounds than for the parent. However, when sampling frequency is compared to the number of detections, it can be seen that, of the 16 degradates in Figure 6, five occur at frequencies greater than the parent, two occur at a frequency approximately equal to that of the parent, and five occur about half as frequently as the parent. These data and those of the NPS indicate that serious consideration should be given to including pesticide degradates as analytes in studies designed to evaluate the impact of pesticides on ground-water quality. The true impact on ground-water resources by some pesticides may only be determined by examining both parent and degradates.

FIGURE 4. States with the Highest Sampling Frequency and Greatest Number of Detections

ST	Wells Sampled N=63,824	Cumulative % of Wells Sampled Nationwide	ST	Wells With Detections N=15,605	Cumulative % of Wells with Detections	ST	Wells with Detections ≥MCL N=9,911	Cumulative % of Wells with Detections ≥MCL
NY	21,219	31	NY	7,439	45	NY	5,763	58
FL	18,153	57	FL	2,362	59	FL	1,708	75
CA	10,325	72	PA	2,047	71	CA	1,136	86
CT	2,661	76	DE	854	76	CT	481	91
NH	2,280	79	ON	358	78	HI	205	93
RI	1,626	82	ME	343	80	MA	138	94
VI	1,631	84	MI	342	82	TX	73	95
OH	1,462	86	MN	275	84	WI	58	96
IA	926	87	MA	247	85	ME	28	96
NV	754	88	TA	216	86	RI	27	96
HI	574	89	MS	200	87	DE	26	96
NA	571	90	NE	192	88	NE	24	96
IL	554	91	RI	157	89	GA	23	96
NH	533	92	VA	149	90	IA	23	96
ND	515	93	SC	134	91	WI	21	96
TX	511	94	TM	134	92	HI	18	96
NE	490	95	MD	125	93	IN	17	96
VT	446	96	MD	117	94	ND	16	96
NC	446	97	CR	114	95	VA	15	96
HO	325	97	NC	95	96			

NS-2

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FIGURE 5. Pesticides detected in more than 100 wells

Pesticide	Wells Sampled	Wells with Detections	Reg. Status
Aldicarb sulfone	37,652	5,070	
Aldicarb sulfoxide	37,593	4,991	
Carbofuran	28,020	4,127	R, SR
Aldicarb	43,786	3,002	R, SR
EDS	20,221	2,918	C
DCP6	20,545	1,629	C
Atrazine	26,909	1,512	R
Chlorotol	23,305	904	R
Alethrol	26,856	543	R, SR
Simazine	22,374	486	
1,2-Dichloropropane	21,399	353	C
Biphenol	17,372	313	
Metrifuron	5,452	232	
Heptachlor	22,255	213	
Heptachlor-phenol	526	213	R, SR
Diuron	17,863	160	S
Cyazine	7,448	155	R, SR
Methomyl	23,250	154	R
DDT	6,142	141	SR
Lindane	1,666	111	SR
DDT	3,115	106	C
Asoclo	271	106	
Cerbaryl	25,712	106	

R: Restricted Use SR: Special Review C: Canceled (See Appendix I for complete definitions)

FIGURE 6. A comparison of parent pesticides and their degradates

Parent Pesticide/Degrade	No. Wells Sampled	Wells with Detections	Parent Pesticide/Degrade	No. Wells Sampled	Wells with Detections
Aldicarb	43,786	3,002	Heptachlor	3,241	55
Aldicarb sulfone	37,652	5,070	Heptachlor epoxide	3,115	32
Aldicarb sulfoxide	37,593	4,991	Endosulfan	2,513	32
DCP6	2,033	5	Endosulfan sulfate	1,969	6
DCP6 acid metabolites	118	59	Permethrin, methyl	1,353	20
Carbofuran	28,020	4,127	4-Nitrophenol	344	3
3-hydroxycarbofuran	22,314	42	Alethrol	26,856	543
3-ketocarbofuran	839	3	Trans-nonachlor	165	2
Atrazine	26,909	1,512	Hydroxyalachlor	297	1
Des-ethyl atrazine	689	27	Macep	437	0
Des-isopropyl atrazine	689	24	ETU	183	1
DDT	3,115	106	Nolinate	355	4
DDD	2,574	35	Mollinate sulfoxide	196	1
DOE	2,918	34			

NS-3

000023

III. DISCUSSION

When viewed as a whole, it might appear the data gathered for this report are quite representative of the United States, since 45 states contributed data. This is not the case. Ground-water monitoring programs vary widely in sampling intensity and design from state to state. When the data are examined on a state-by-state basis (Figure 4), it can be seen that 90% of all wells sampled can be found in only 12 states and only 8 states sampled 1,000 or more wells. The states that sampled the greatest number of wells are New York, Florida, and California; each sampled more than 10,000 wells. Together, these three states collected 70% of the data in this report. Not surprisingly, 70% of the wells with pesticide detections and more than 80% of wells with detections greater than the EPA drinking water health standards are also located in these three states. This should not be misconstrued to mean that the ground water in these three states is more contaminated than that of other states, or that all ground water in these states is contaminated. On the contrary, an active, supported sampling program generally indicates a high regard for ground-water quality.

The data in the PGWDB can provide an indication of where ground water has been sampled, where additional sampling might be necessary and where contamination occurs in relationship to the intensity of sampling. However, great care must be exercised when attempting to use these data to characterize the status of ground-water quality resulting from pesticide use nationally or at the state level. This can be demonstrated by examining the data from several states more closely.

In California, 20% of the 10,000 wells sampled were contaminated with pesticides; however, the vast majority of wells sampled and wells with detections in California occurred in Fresno, Kern, Los Angeles and San Bernardino counties. Relatively few wells were sampled in the more than 50 other counties in California. Because the majority of sampling occurred where agricultural pesticide use is high, the proportion of wells with detections very likely exaggerates the extent of contamination statewide. New York sampled a very large number of wells and a relatively large portion (35%) of these wells were contaminated, but 99% of the wells sampled, and 99% of the wells contaminated with pesticides are in Suffolk County. A large-scale sampling program was initiated in Suffolk County after aldicarb residues were found in drinking water wells in agricultural areas. This sampling pattern drastically skews the impact of pesticides on ground-water quality in New York. Similarly, approximately 23% of the wells sampled in Iowa contained pesticides. However, much of Iowa's early ground-water sampling was performed in heavy pesticide-use areas with alluvial aquifers that are very vulnerable to contamination. In 1988-89, when Iowa conducted a statistically designed survey of rural wells throughout the entire state, only about 14% of the wells sampled were contaminated with pesticides. The monitoring scenarios from these states are not unlike situations in many other states. They are presented here to underscore the importance of factors such as sampling intensity and spacial distributions on the overall monitoring results.

NS-4

000024

These same cautions must be exercised when ranking pesticides by frequency of detection. These data are useful when placing pesticides in general groups; however, the absolute position of one pesticide in relation to another is strongly affected by factors such as sampling frequency, spatial distribution and detection limits.

The PGWDB is a collection of isolated studies. Many anomalies occur in these data that make interpretation difficult. Monitoring for some of the pesticides reported in this database occurred primarily or exclusively in one state and sometimes only in a small area of that state. Readers are strongly encouraged to use these data carefully and not to over-interpret them. This is not because the individual datasets are poor; on the contrary, the vast majority of the studies were carefully planned and well executed. Rather, it is because the datasets were not necessarily meant to be combined. To make the best use of these data, examine the regional volumes of this report. These more detailed volumes will provide additional insight into sampling areas, sampling dates and study designs.

IV. THE FUTURE

The vulnerability of ground water to contamination by pesticides depends upon a variety of factors including depth, topography, soil, climate, pesticide use and pesticide application practices. In some cases, ground water is shallow or closely connected with surface water and the results of surface activities can be observed within months. More often, contamination is not observed for many years, allowing cause-and-effect relationships to become obscured. This report, for the most part, is a retrospective examination of the agricultural practices of the 1960s and 1970s, the results of which were observed through monitoring performed 20 years later. The condition of our ground-water resources for the next 20 years will be greatly affected by how we are handling our chemicals now. Our challenge today is clearly prospective.

EPA's Office of Pesticide Programs (OPP) is planning to publish a summary report of the data in the PGWDB on approximately a yearly basis. We are interested in presenting the data in a manner that is the most helpful to as many users as possible. The following are areas in which we would like to receive comments:

1. Should future reports summarize only "new data" (those received since the last report) or all of the data? Should we continue to report very old monitoring data (10 to 20 years), given the fact that some of these studies had very high detection limits and monitored for pesticides that are no longer of regulatory interest?
2. What changes should be made to the maps, graphs and tables? Are they too detailed or not detailed enough? Are important pieces of information missing? Is there a clearer or more useful way to present these data?
3. How are those outside of OPP using the PGWDB?

NS-5

000025

We appreciate all of those who took the time to comment on the draft version of this report. Many of the suggestions offered were included in this final version. However, some very good suggestions regarding changes to the tables could not be included in this report due to time constraints. These suggestions were taken seriously and will be considered for future reports.

For the PGWDB to retain its value, OPP must continue to gather and share as much pesticide monitoring information as possible. Any government agency or private institution that would like to have its work included in the PGWDB should provide a hard copy of a final or interim report and the sample and well data in electronic format. PGWDB data elements are listed on page OV-4 of this report. Electronic media should be accompanied by a description that includes, hardware compatibility (IBM, Apple etc.), operating system (DOS, UNIX, OS2), format identification (ASCII or software package name) and a data dictionary. Anyone wishing to provide comments or data may do so by contacting:

Constance A. Hoheisel
U. S. Environmental Protection Agency
Office of Pesticide Programs
Environmental Fate and Effects Division (H7507C)
401 M Street, SW
Washington, DC 20460

Telephone: 703-305-5455
FAX: 703-305-6309

NS-6

000026

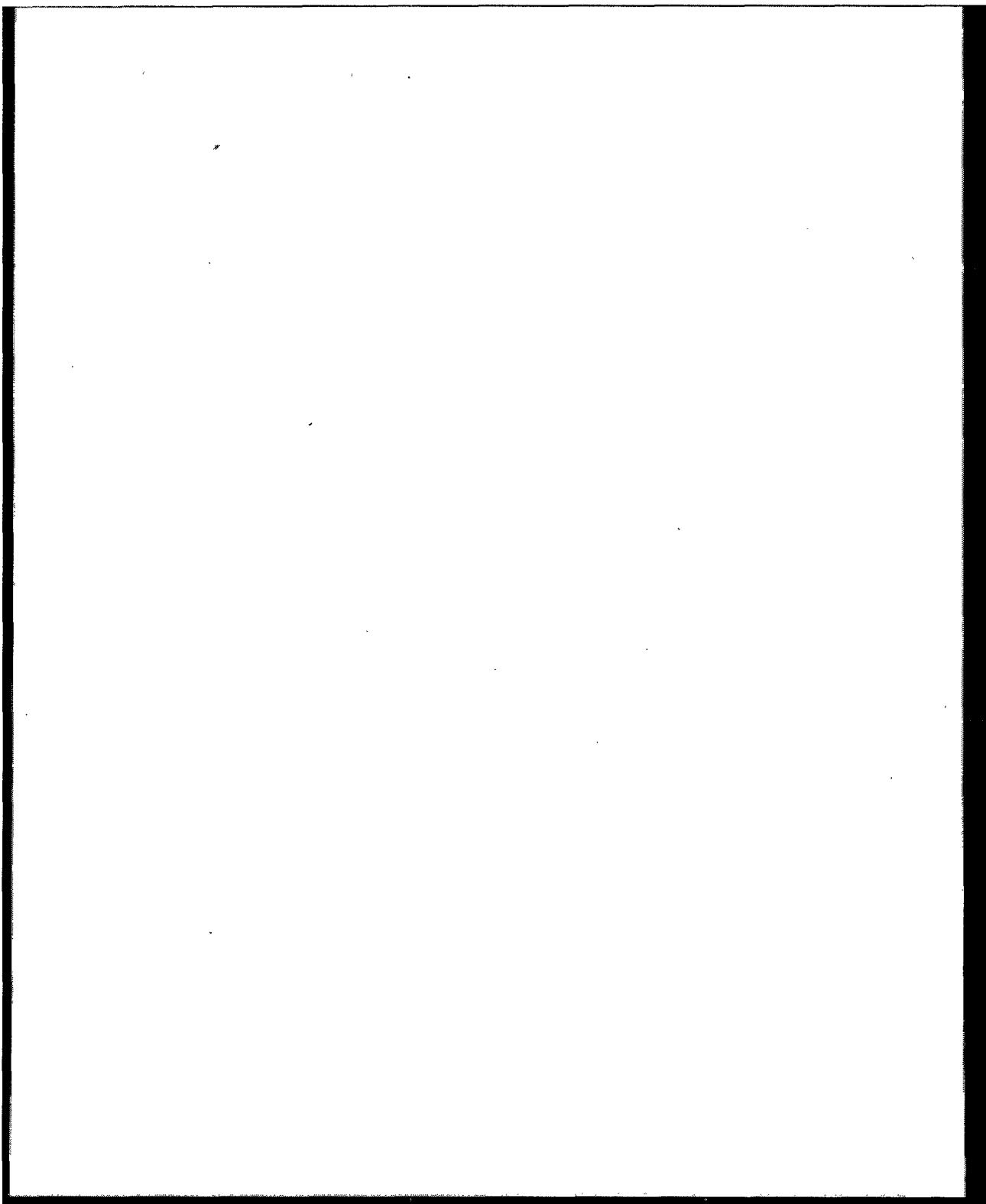
REFERENCES

1. *Hoheisel, C. and Davies-Hillard, L.* Pesticide Information Network. U.S. Environmental Protection Agency, Office of Pesticide Programs, Washington D.C., 1987. Database: 703-305-5919. User Support: 703-305-7499.
2. *Spencer, D.A.* The National Pesticide Monitoring Program. U.S. Environmental Protection Agency, 1974. Summary document published by The National Agricultural Chemicals Association.
3. *U.S. Environmental Protection Agency.* The National Survey of Pesticides in Drinking Water Wells. Washington, D.C., 1990. For Fact Sheets contact: EPA Public Information Center, 202-260-2080. For copies of reports contact: National Technical Information Service (NTIS), 703-487-4650.
4. *Williams, W.M., Holden, P.W., Parsons, D.W. and Lorber, M.N.* Pesticides in Ground Water Data Base-1988 Interim Report. U.S. Environmental Protection Agency, Office of Pesticide Programs (H7507C), Washington, D.C., 1988.
5. *U.S. Environmental Protection Agency, Office of Information Resources Management STORET (Water Quality Database).* Washington, D.C. User assistance: 1-800-424-9067.
6. *U.S. Geological Survey, National Water Data Exchange.* WATSTORE (Water Quality Database). Reston, VA. For further information: 703-648-5671.
7. *U.S. Environmental Protection Agency, Office of Water.* Drinking Water Regulations and Health Advisories. Washington, D.C., November 1991. Tel: 202-260-7571.
8. *U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water.* Definitions for the Minimum Set of Data Elements for Ground-Water Quality. Washington, D.C., 1991.
9. *U.S. Environmental Protection Agency, Office of Pesticide Programs.* Status Of Pesticides In Reregistration And Special Review, (Rainbow Report)., Washington, D.C., March 1992. For further information: 703-308-8000.

Author and reference information for the studies used to compile this National Summary can be found in the appropriate PGWDB regional volume.

NS-7

000027

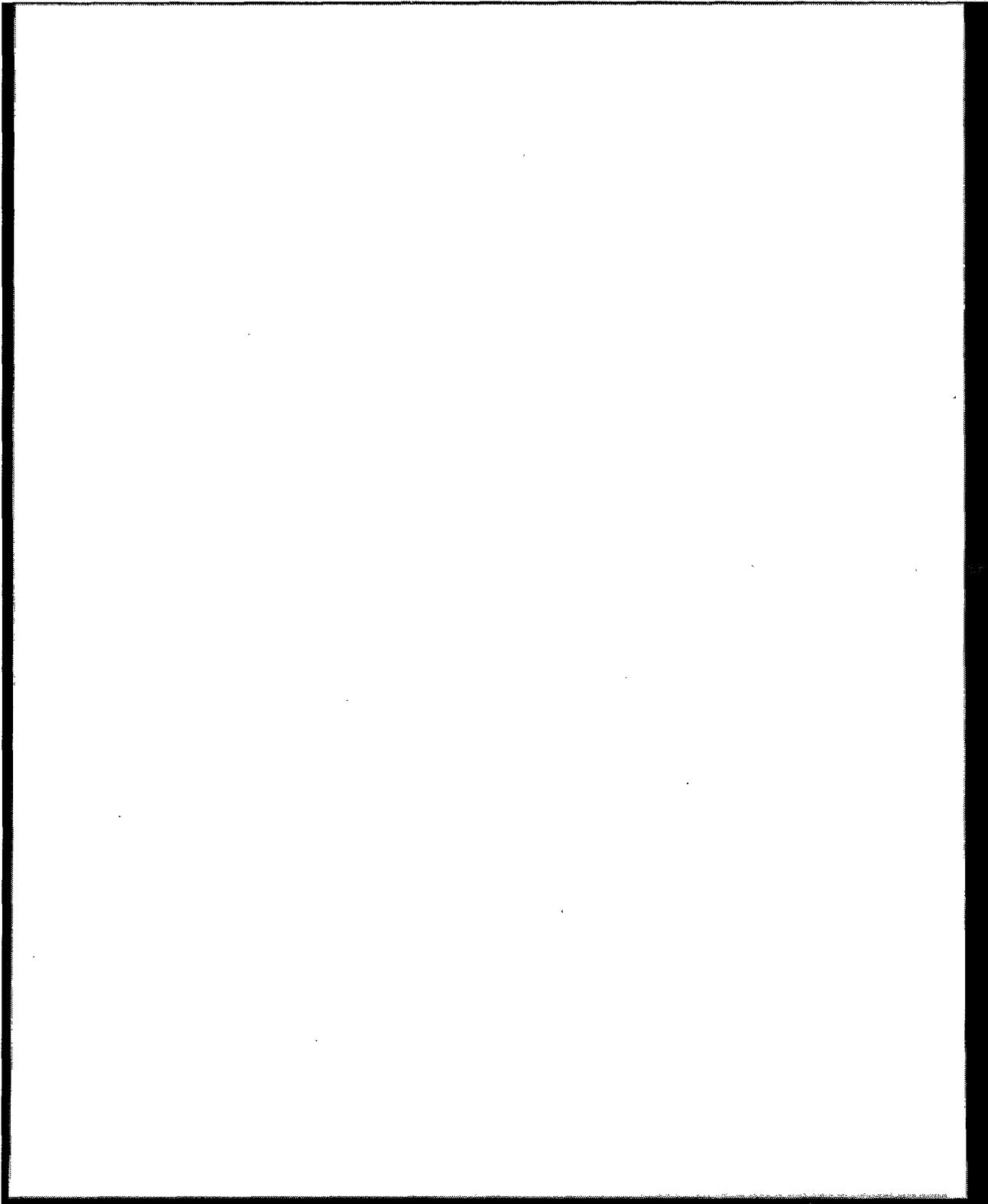


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Pesticides in Ground Water Database - 1992 Report

MAPS: BY EPA REGION

000029

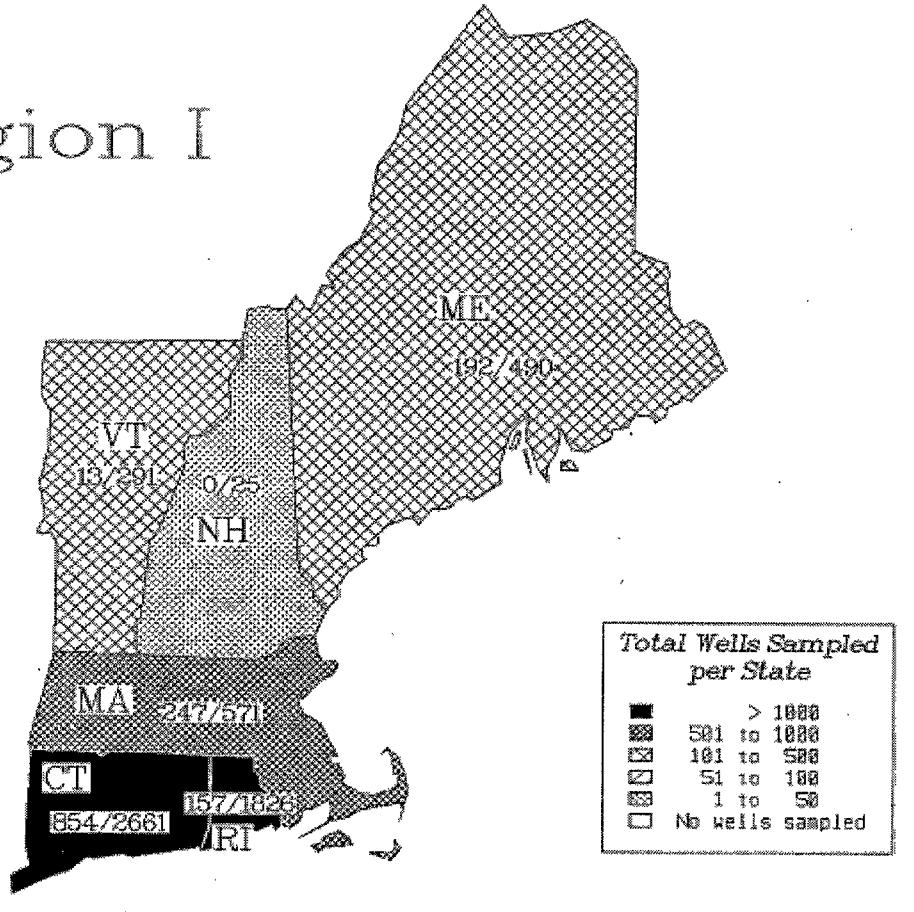


000030

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

Region I



NS-11

000031

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

Region II

**Total Wells Sampled
per State**

- > 1000
- ▨ 501 to 1000
- ▢ 101 to 500
- 51 to 100
- ▨ 1 to 50
- No wells sampled

NY

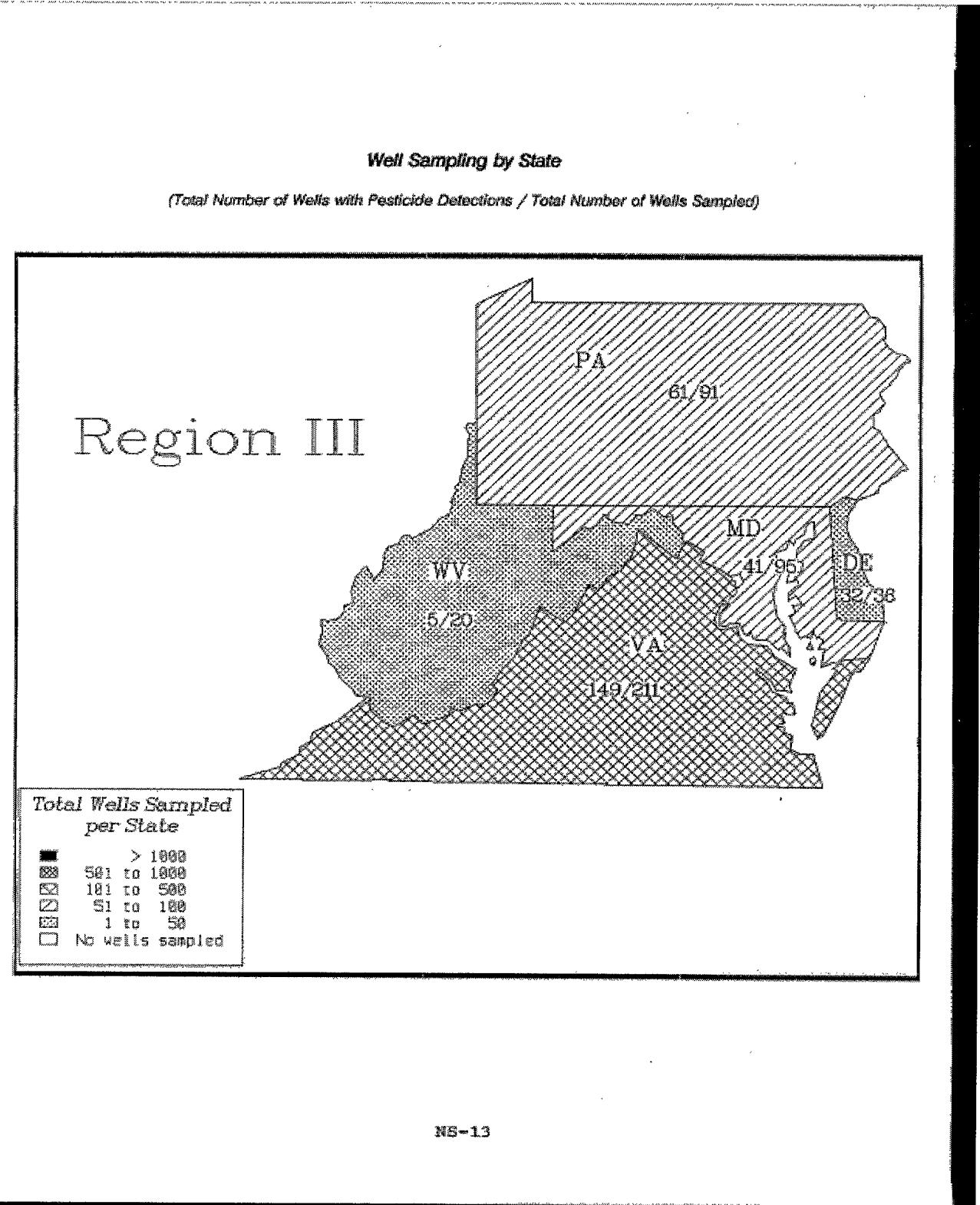
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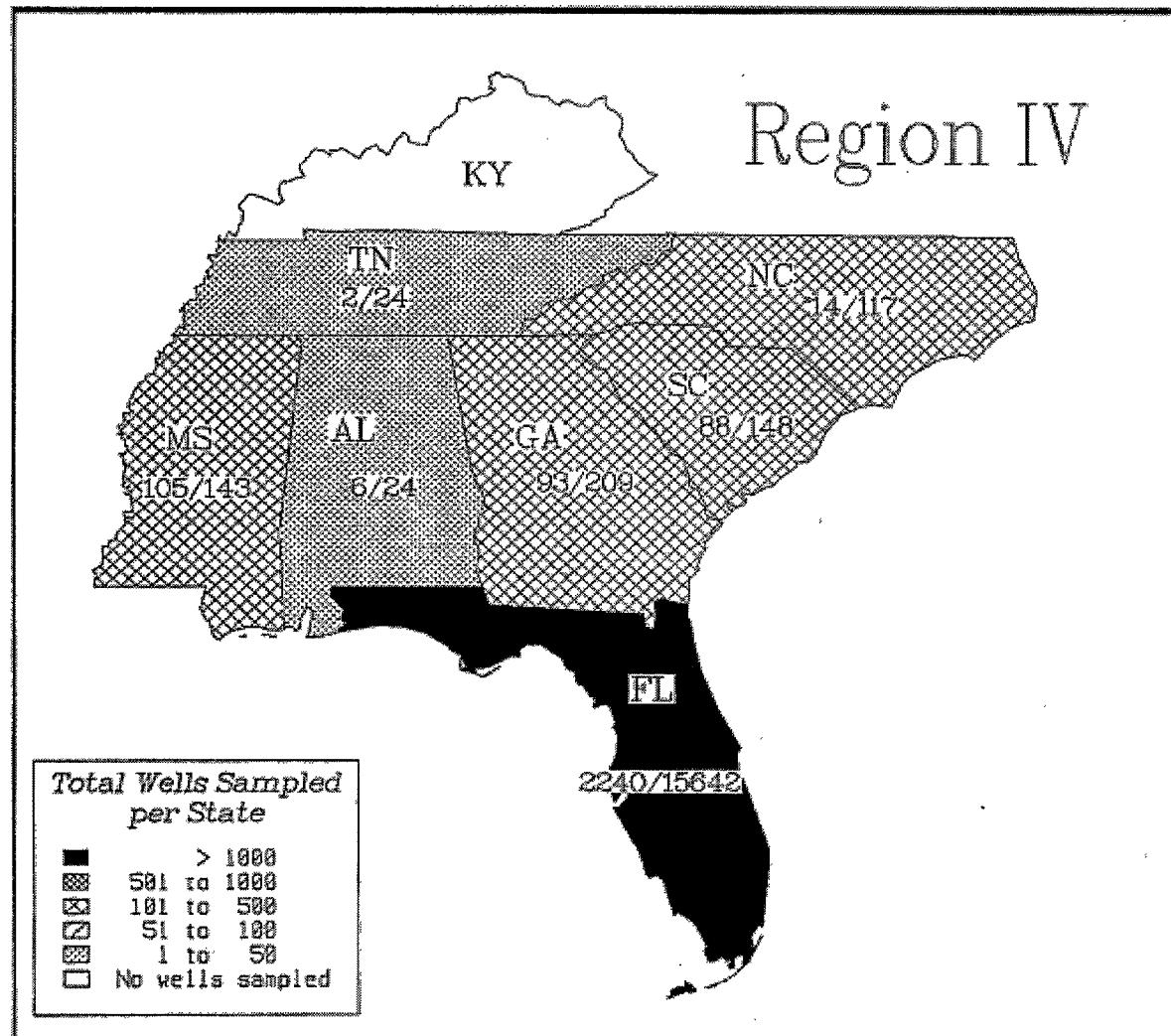
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NS-12

000032



000033

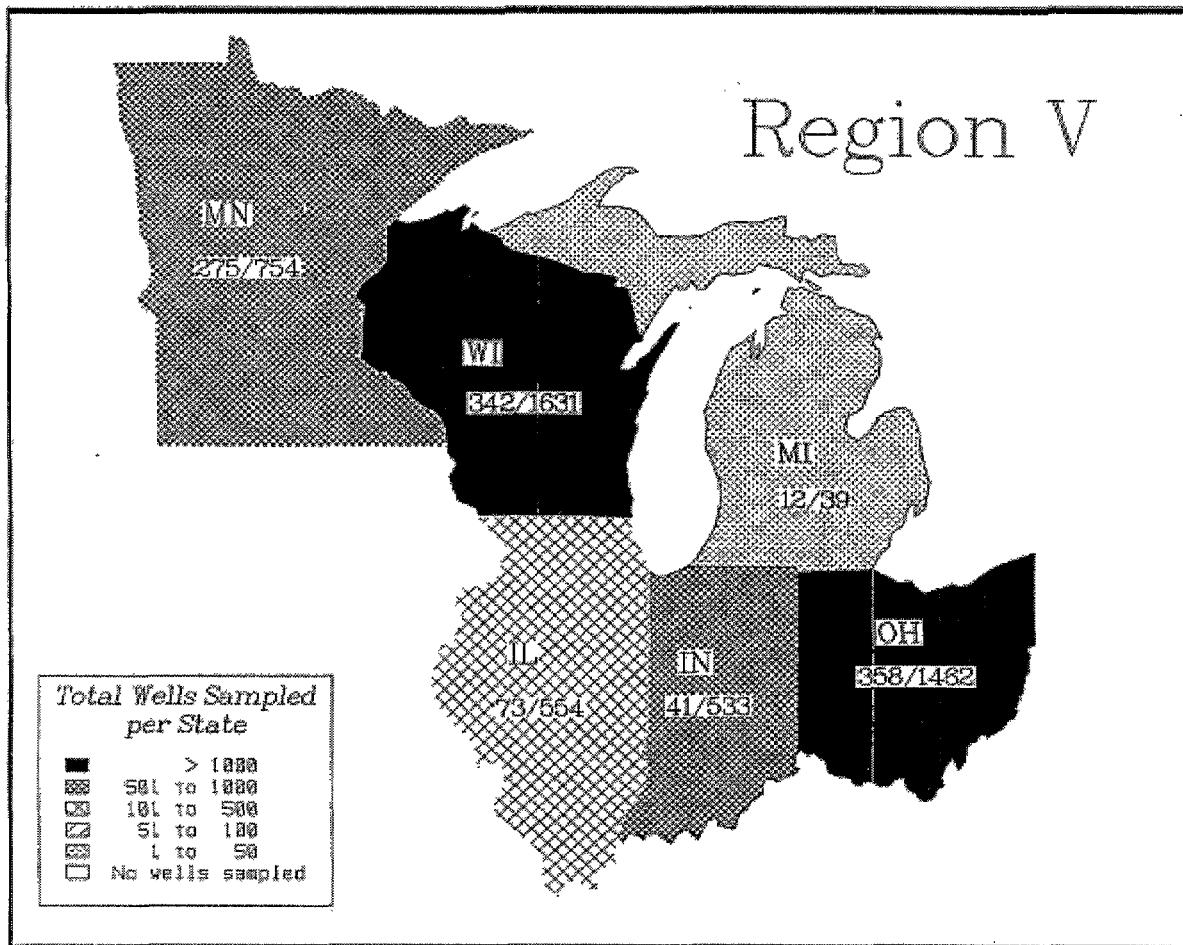


NS-14

000034

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)



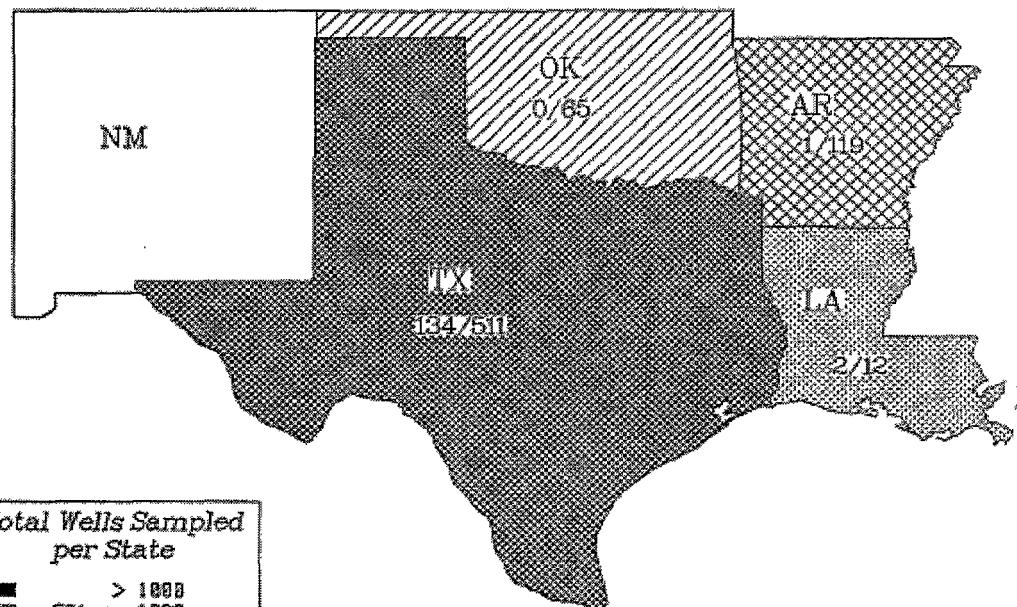
NS-15

000035

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

Region VI



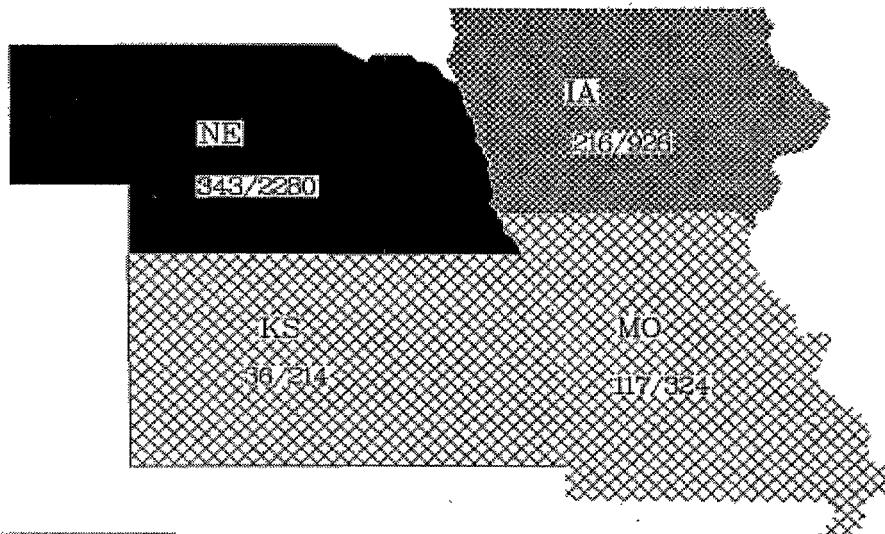
NS-16

000036

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

Region VII



Total Wells Sampled per State
> 1000
501 to 1000
101 to 500
51 to 100
1 to 50
No wells sampled

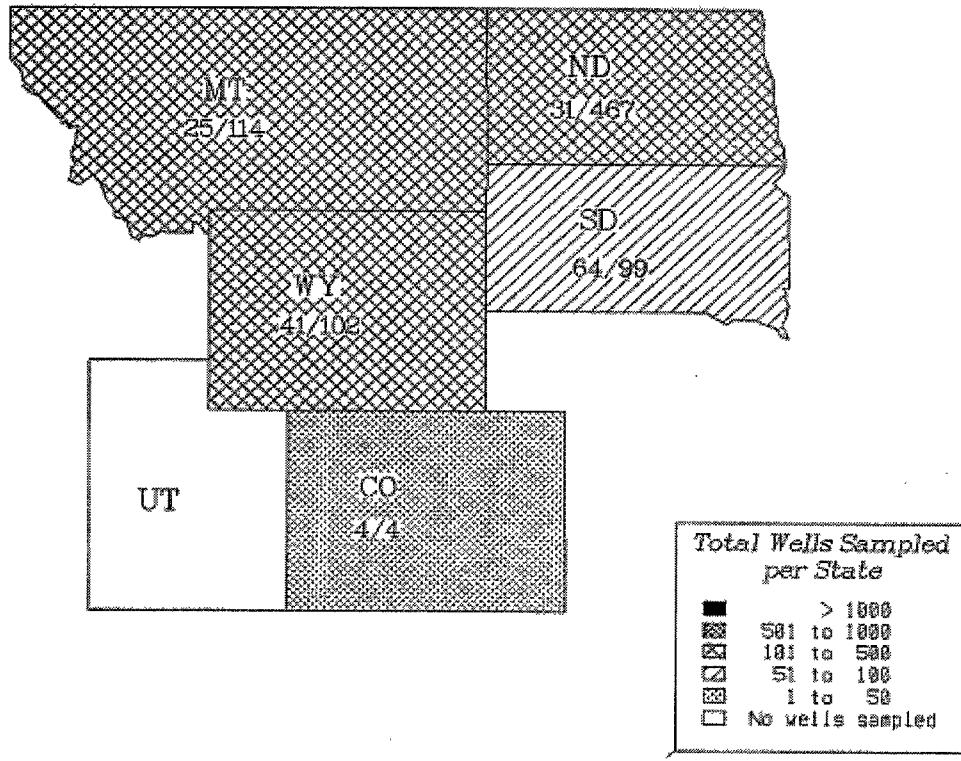
NS-17

000037

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

Region VIII

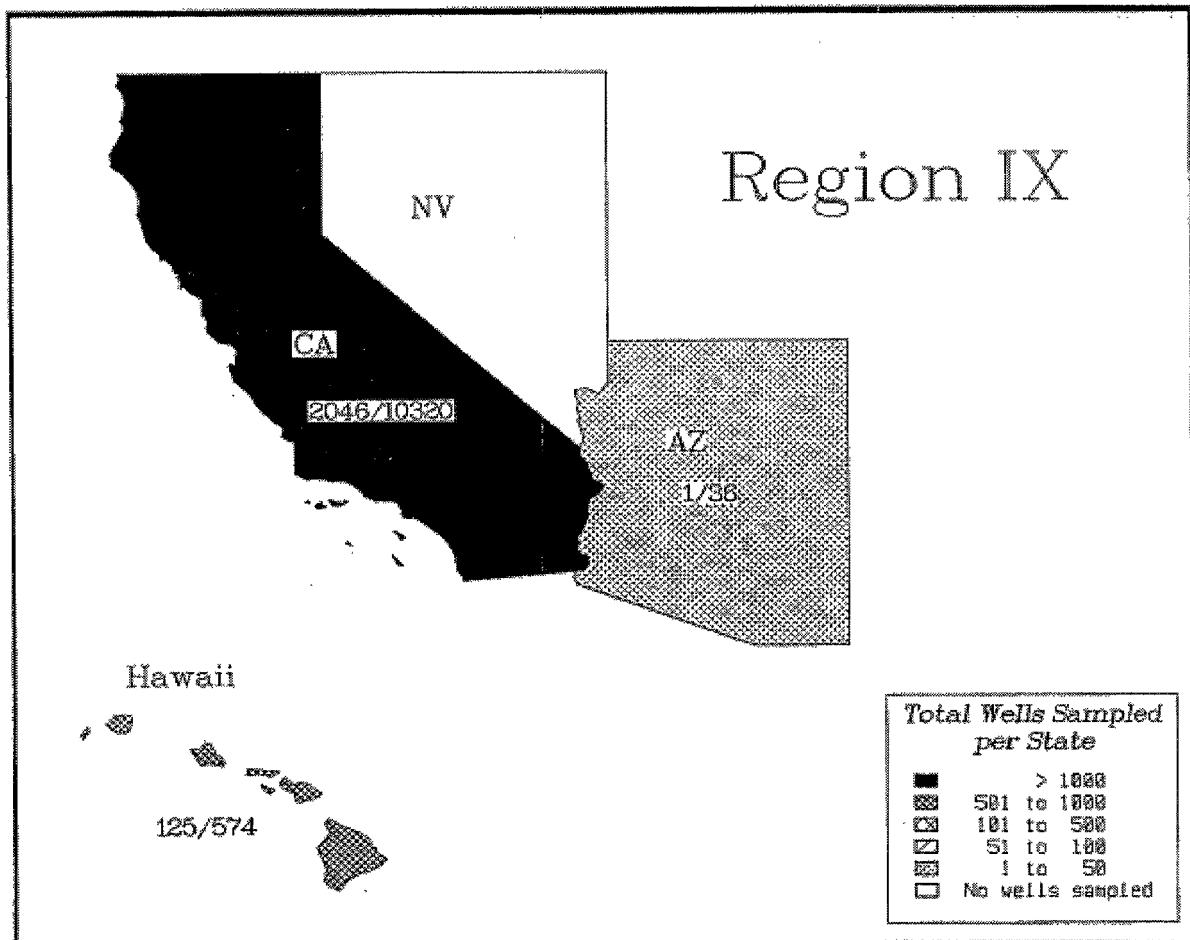


NS-18

000038

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)

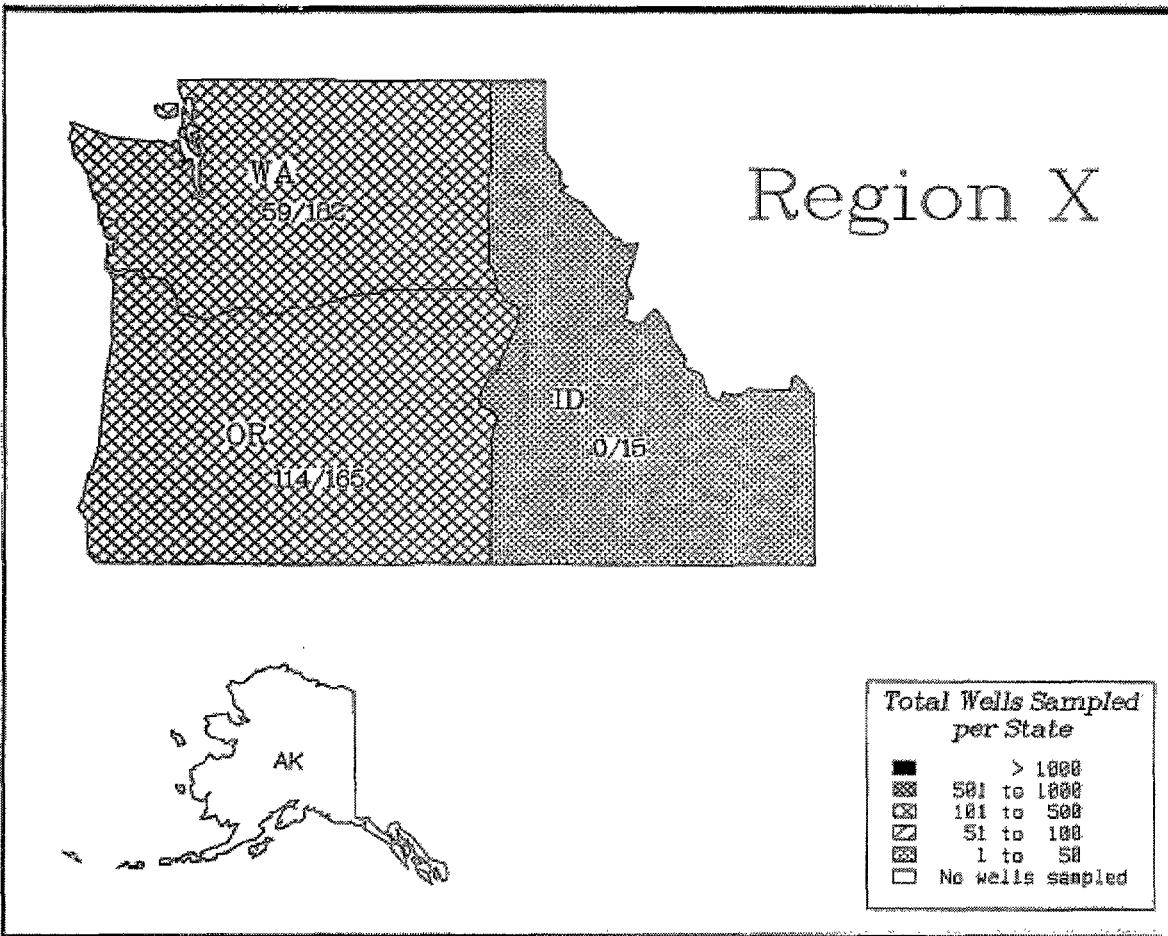


NS-19

000039

Well Sampling by State

(Total Number of Wells with Pesticide Detections / Total Number of Wells Sampled)



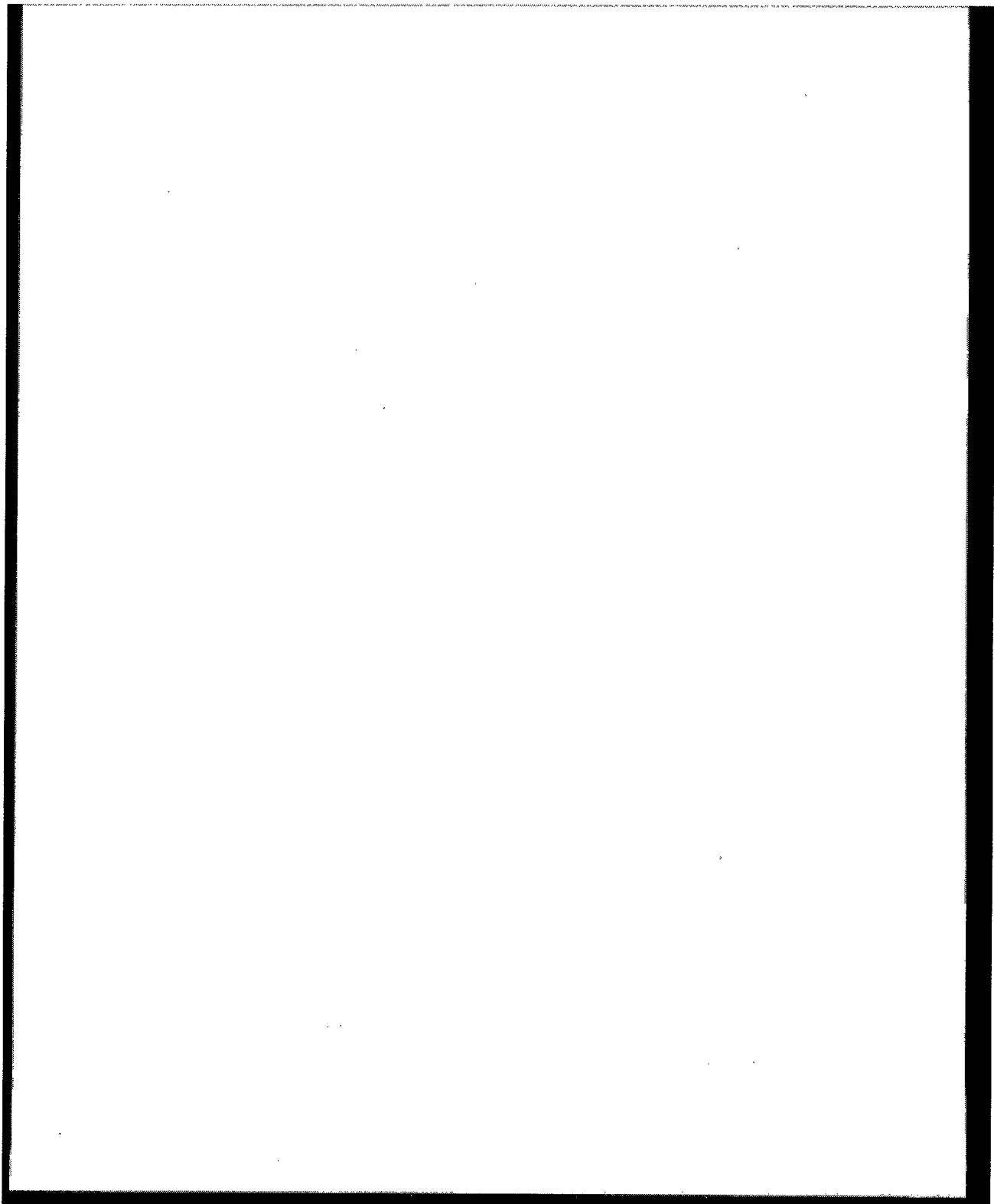
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Pesticides in Ground Water Database - 1992 Report

GRAPH 1: WELL DATA BY STATE

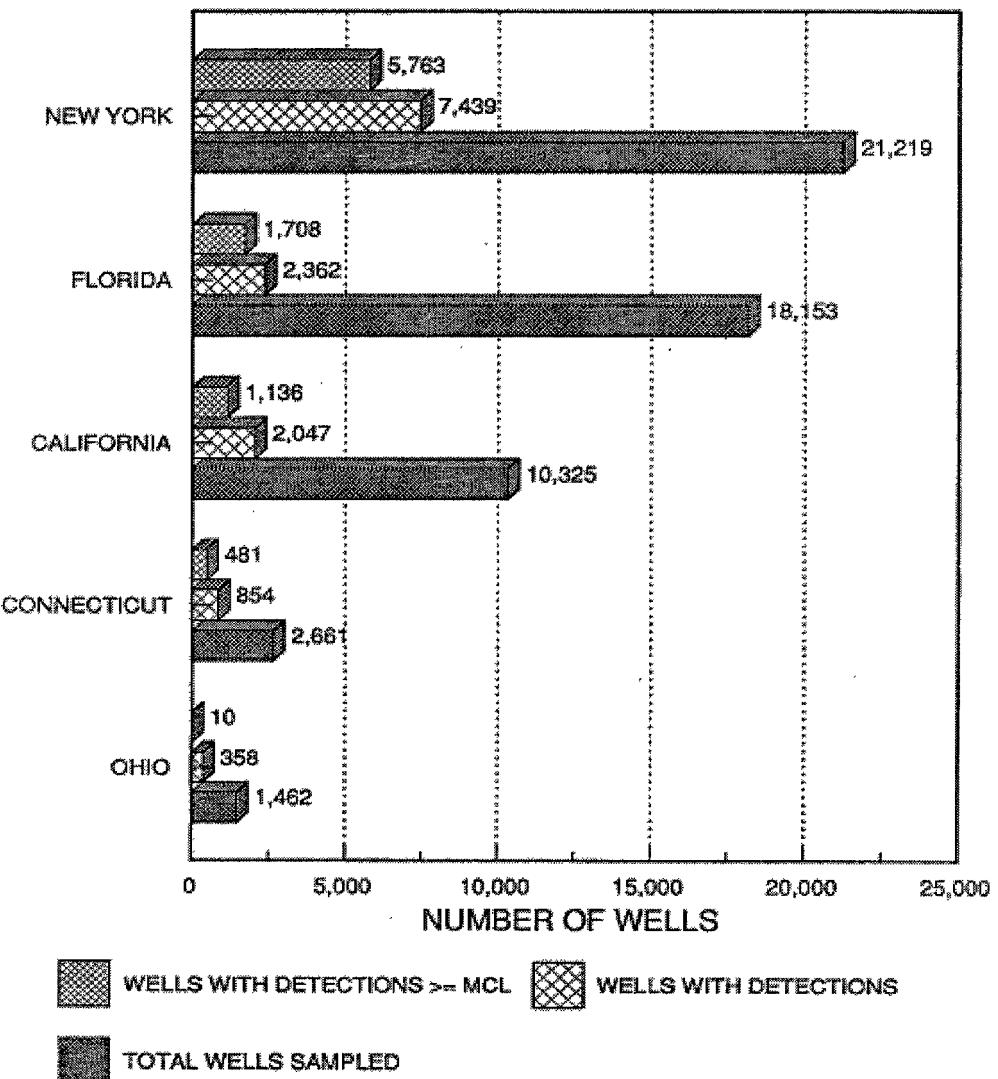
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000042

WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

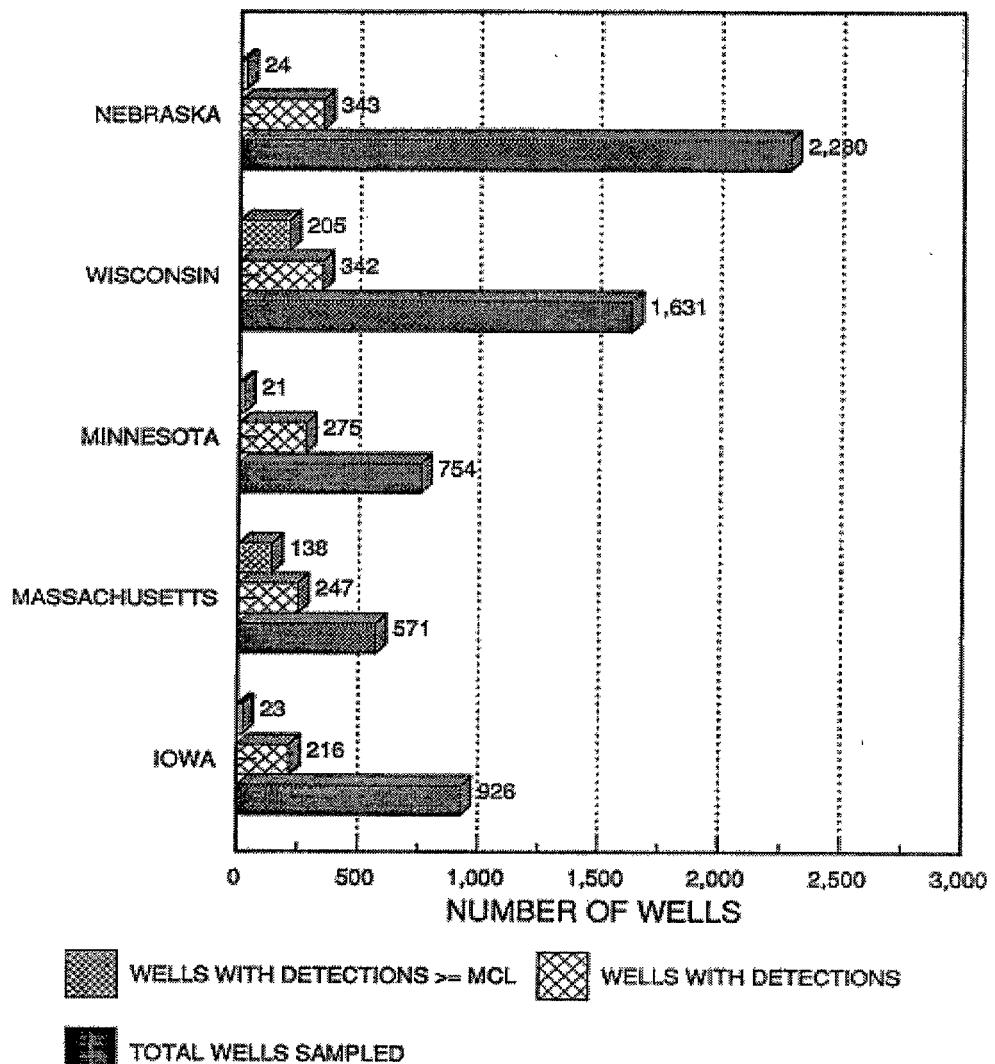


NS-23

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WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

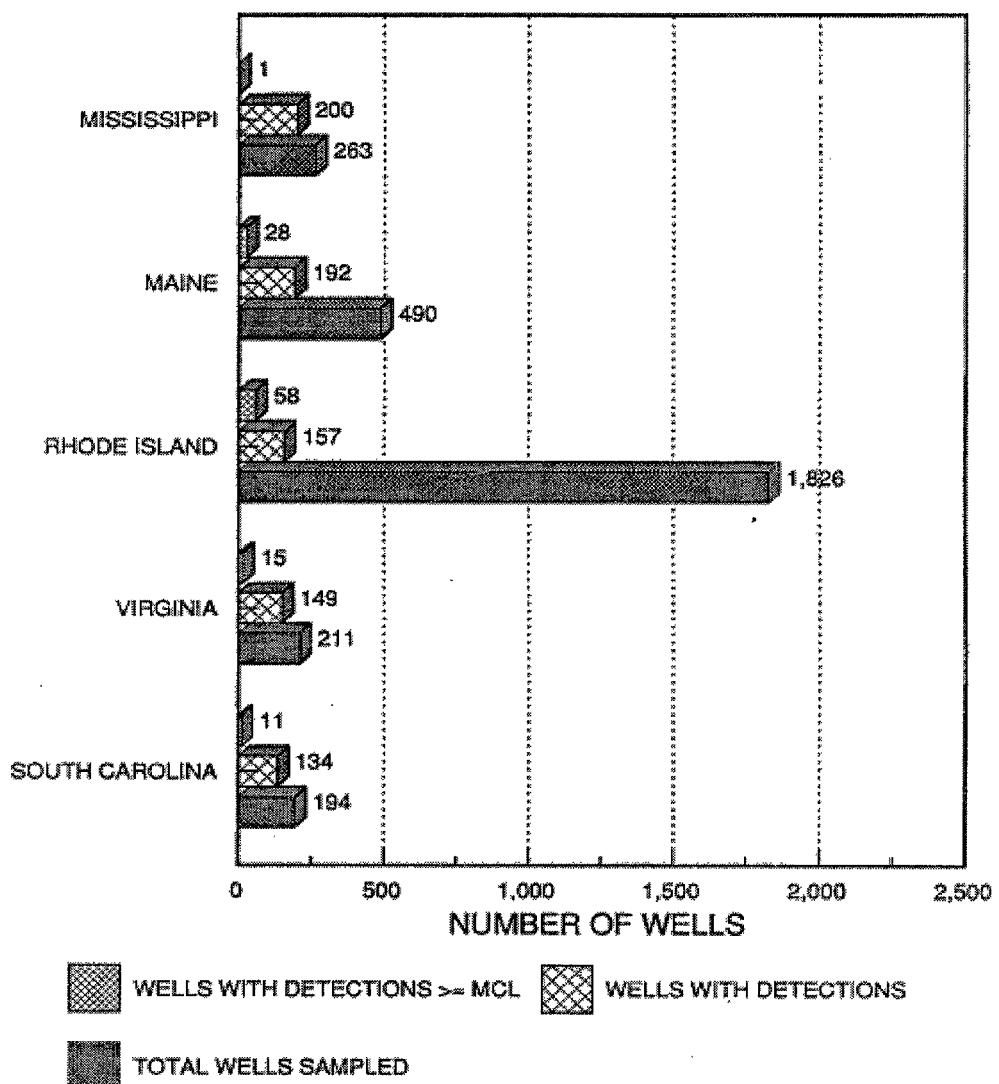


NS-24

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WELL MONITORING BY STATE

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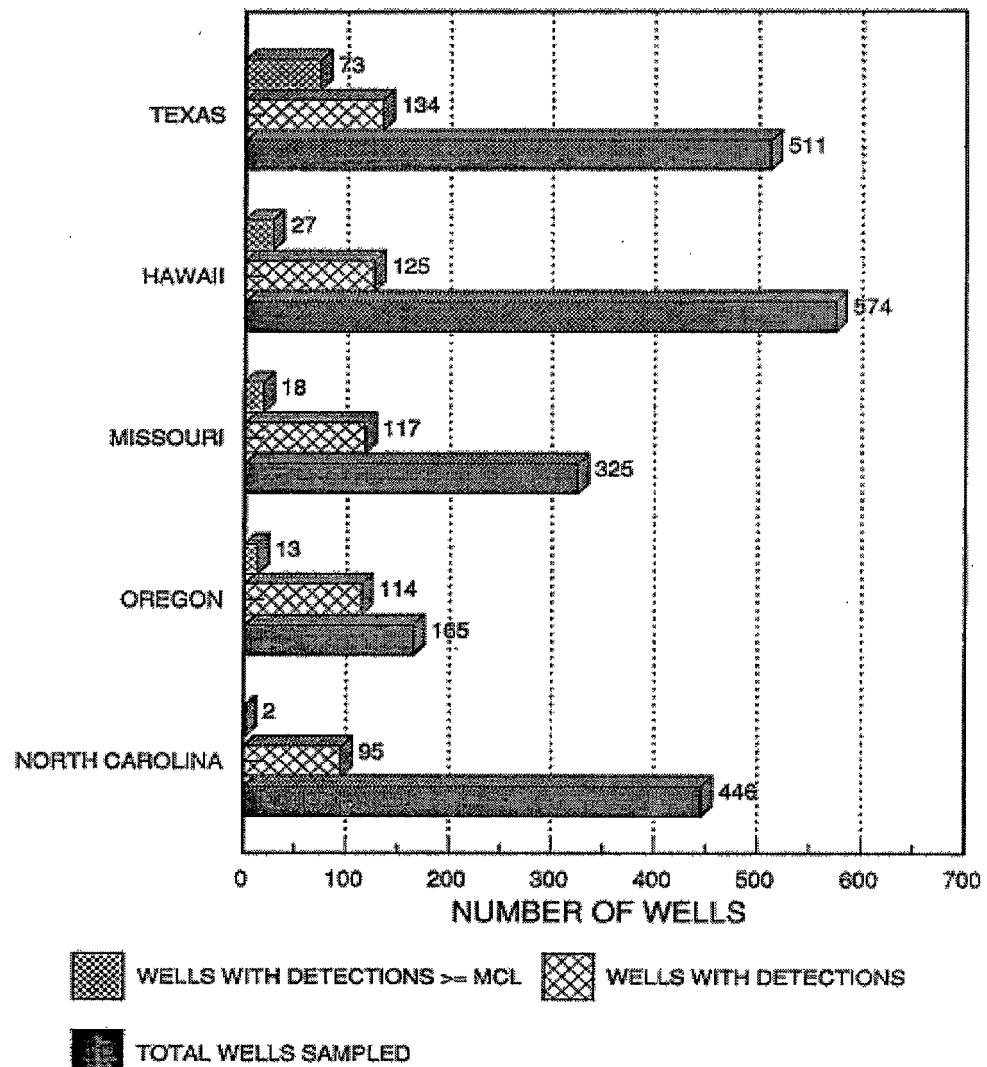


NS-25

000045

WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



NS-26

000046

WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

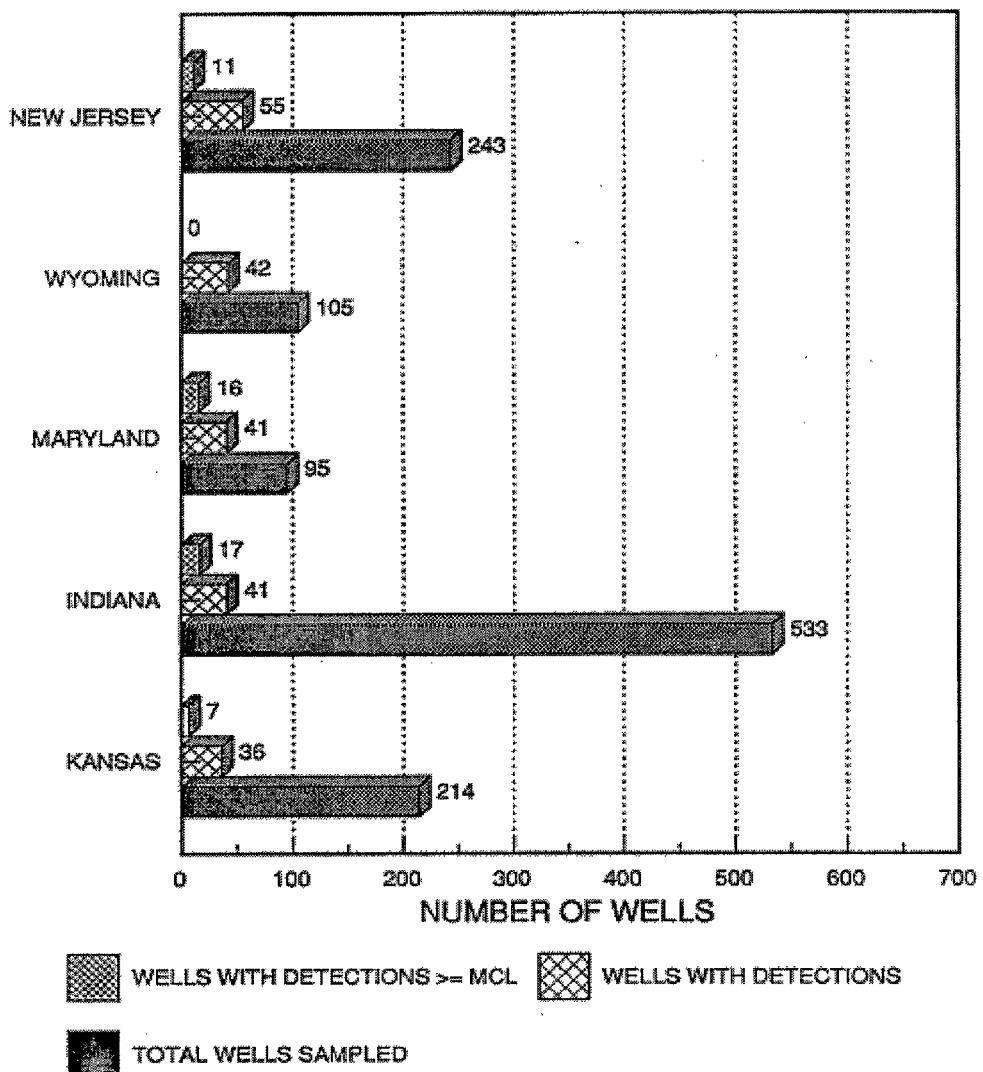


NS-27

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WELL MONITORING BY STATE

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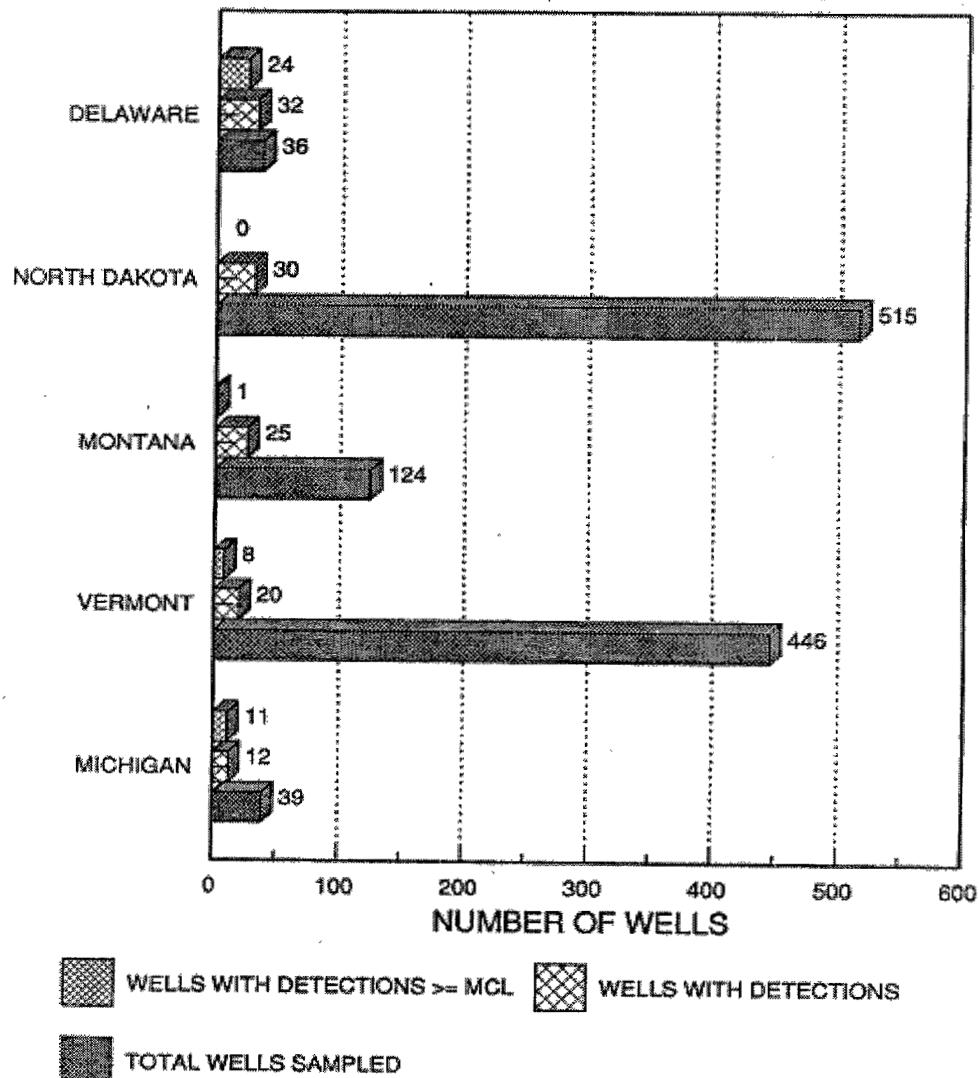


NS-28

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WELL MONITORING BY STATE

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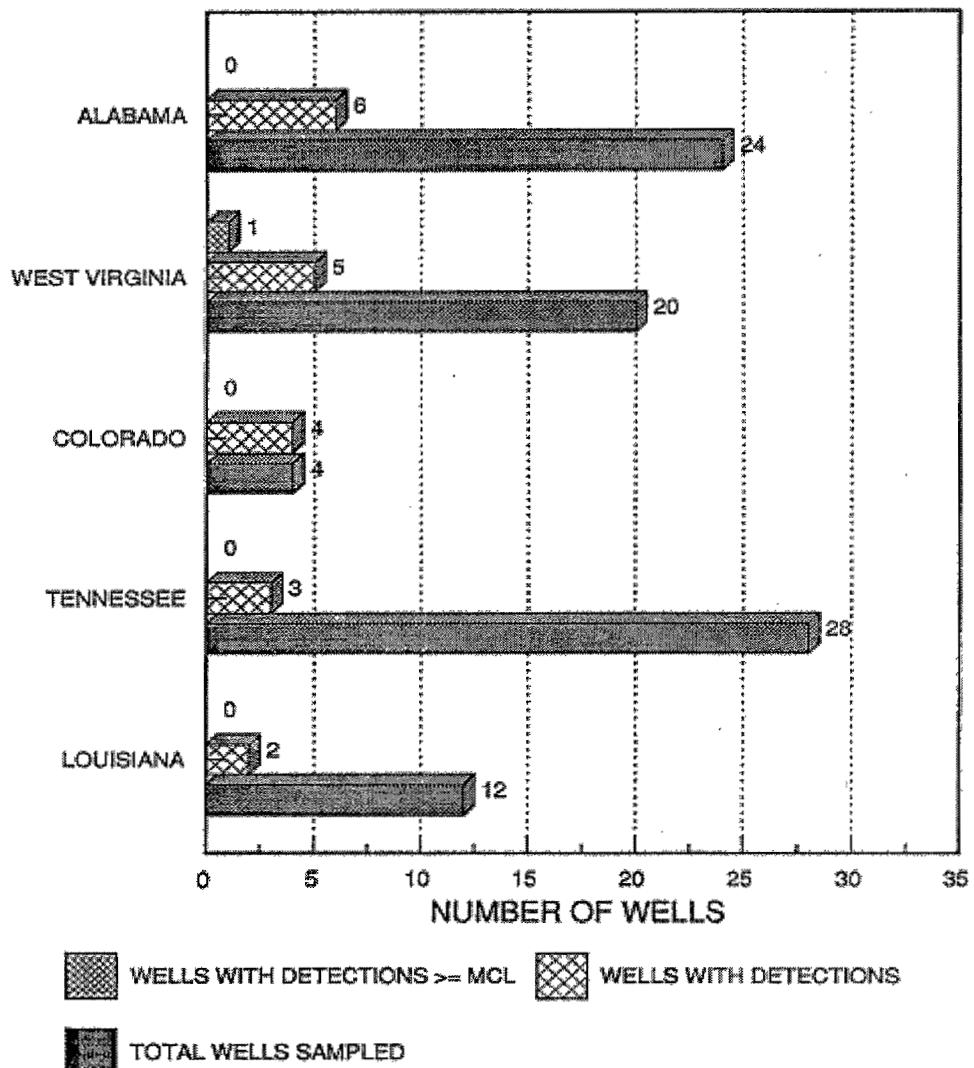


NS-29

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WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

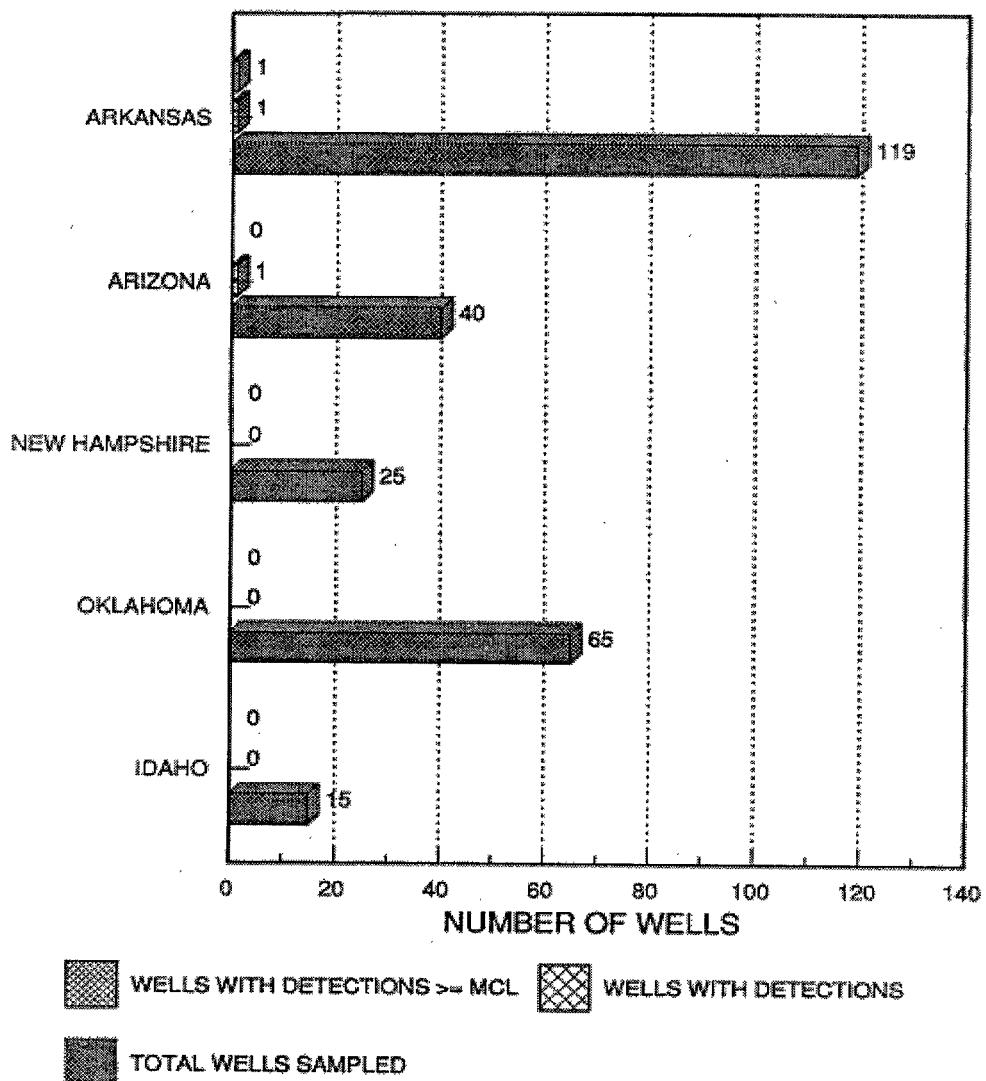


NS-30

000050

WELL MONITORING BY STATE

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



NS-31

000051

WELL MONITORING BY STATE

ALASKA	NO DATA AVAILABLE
KENTUCKY	NO DATA AVAILABLE
NEW MEXICO	NO DATA AVAILABLE
NEVADA	NO DATA AVAILABLE
UTAH	NO DATA AVAILABLE

NUMBER OF WELLS

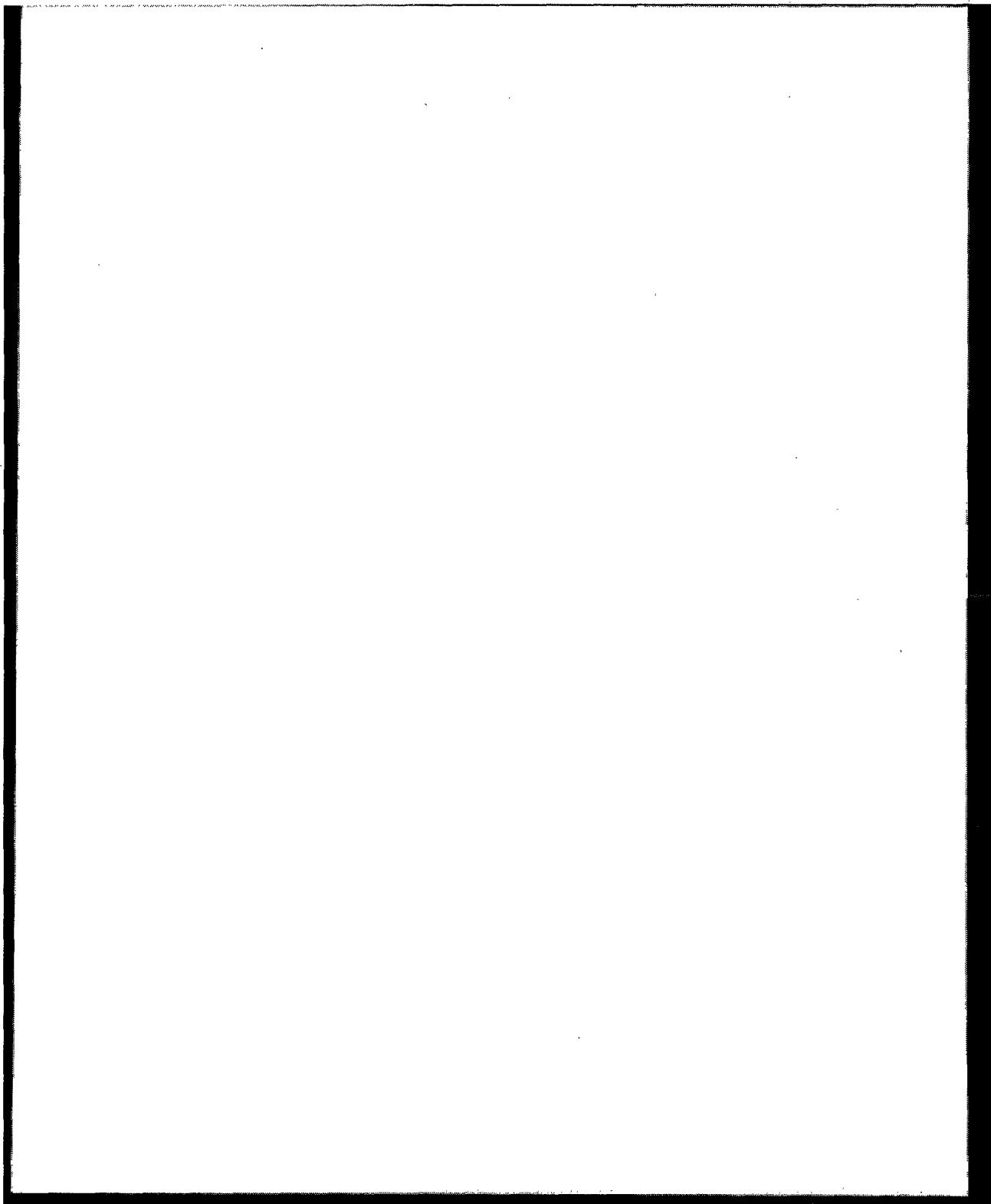
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Pesticides in Ground Water Database - 1992 Report

GRAPH 2: WELL DATA BY PESTICIDE

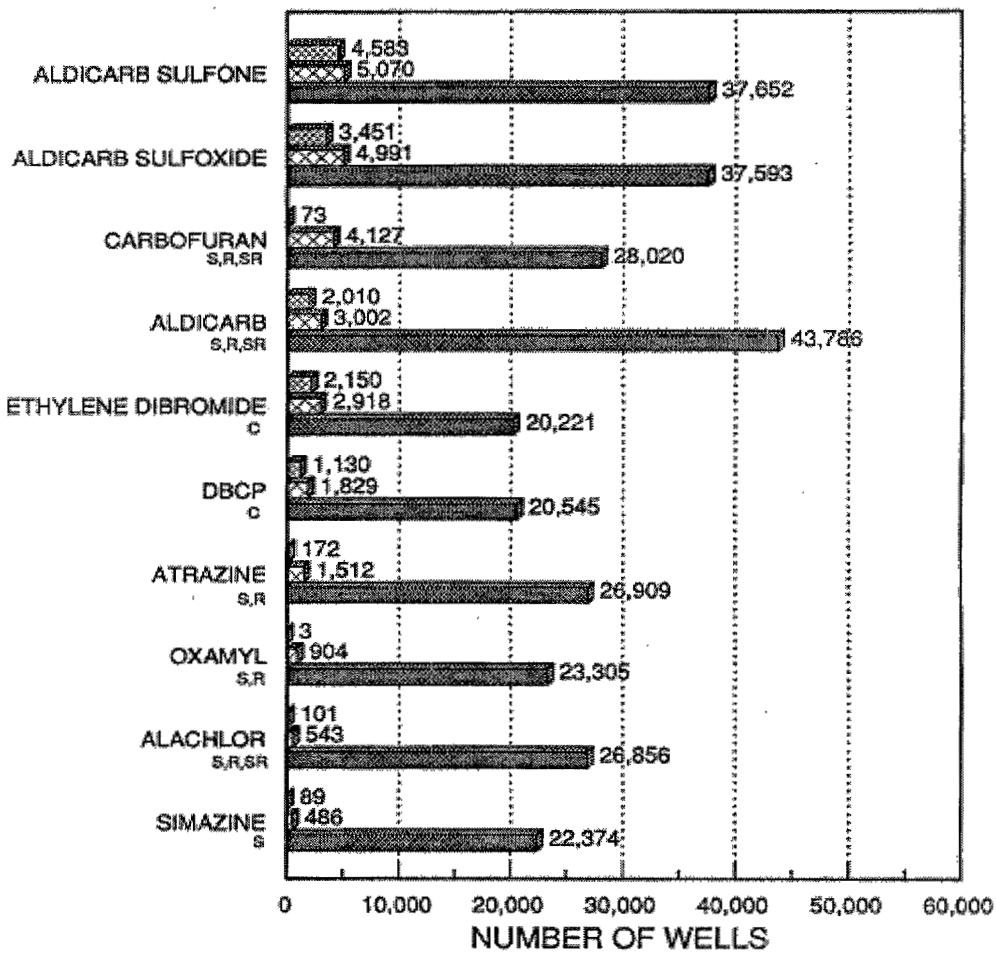
000053



000054

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



WELLS WITH DETECTIONS >= MCL



WELLS WITH DETECTIONS



TOTAL WELLS SAMPLED

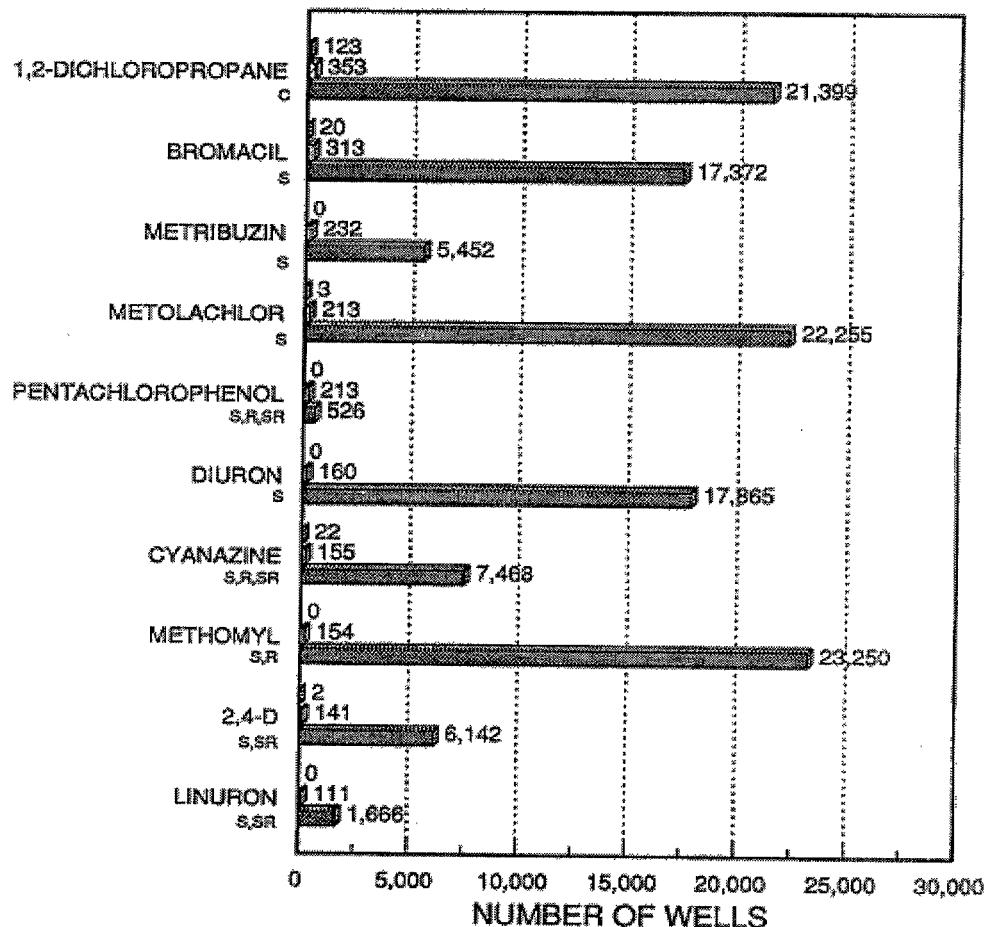
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NS-35

000055

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



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[diagonal lines] TOTAL WELLs SAMPLED

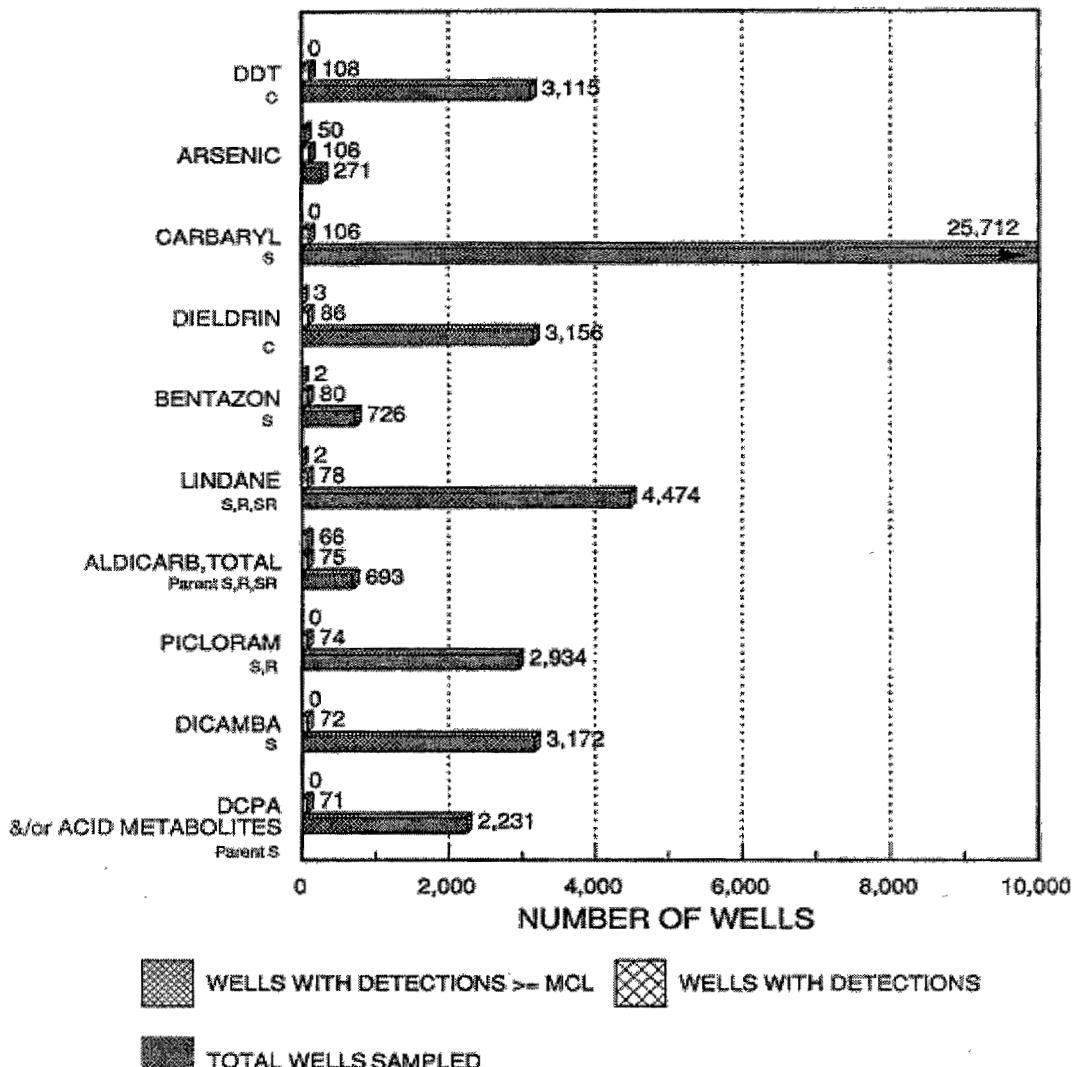
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NS-36

000056

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

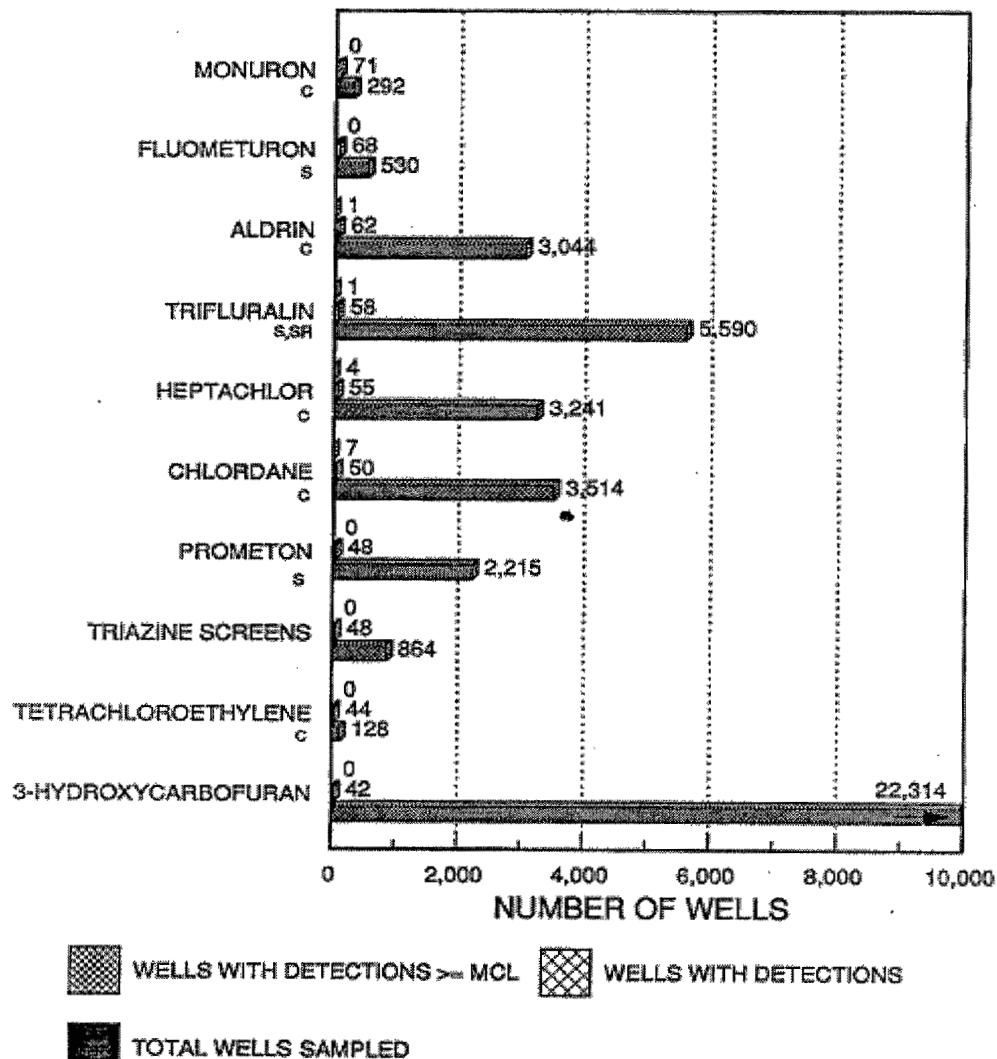


NS-37

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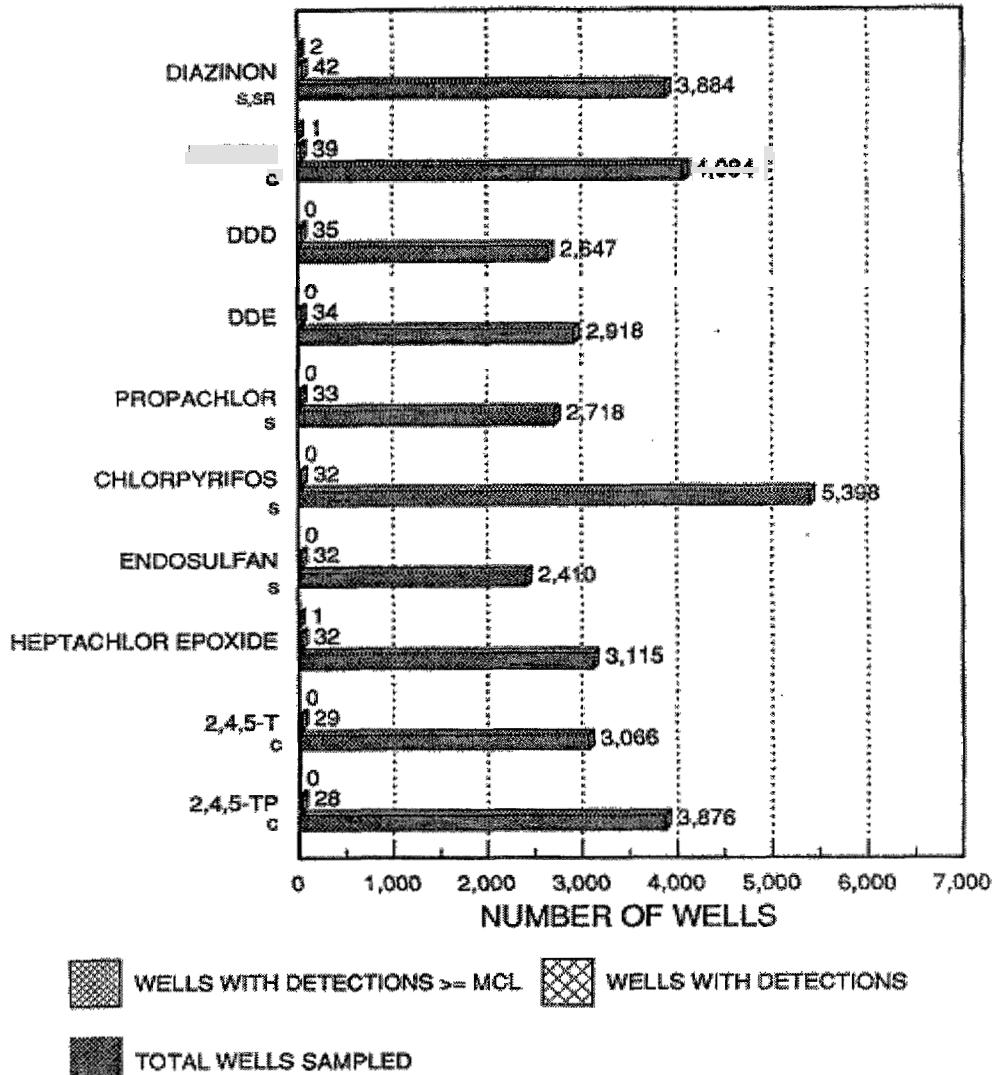


NS-38

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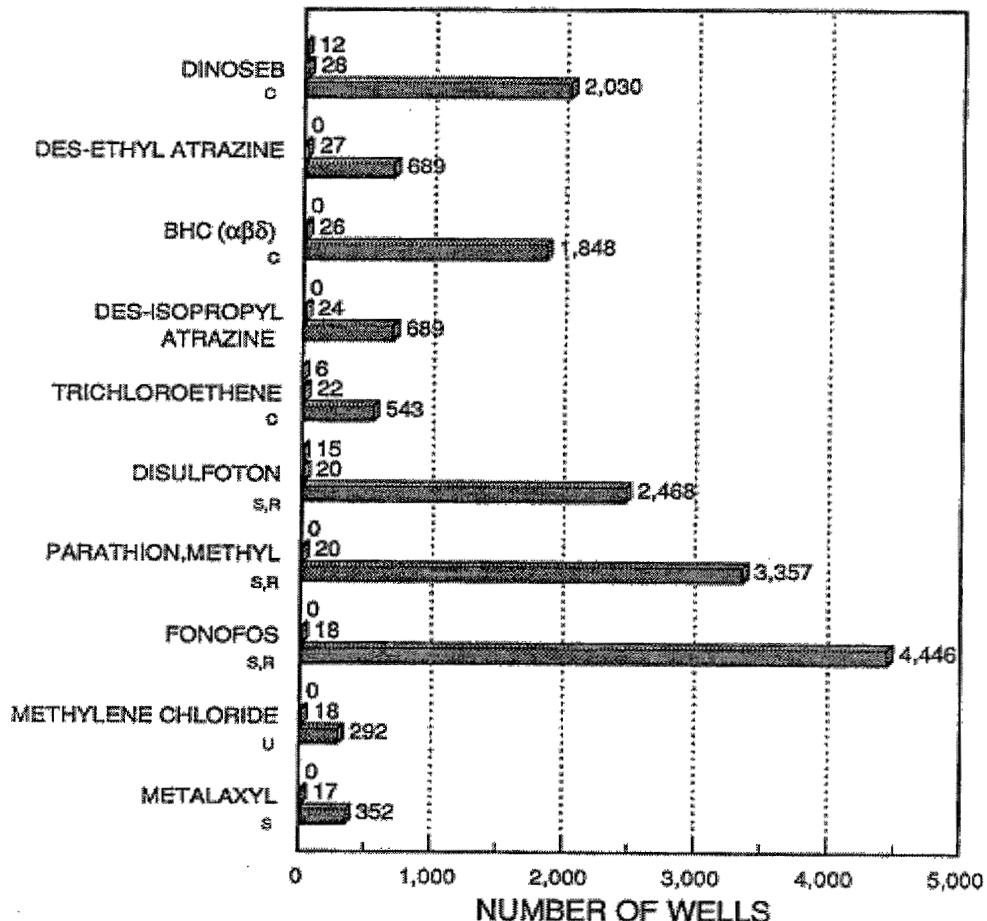


NS-39

000059

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



WELLS WITH DETECTIONS >= MCL



WELLS WITH DETECTIONS



TOTAL WELLS SAMPLED

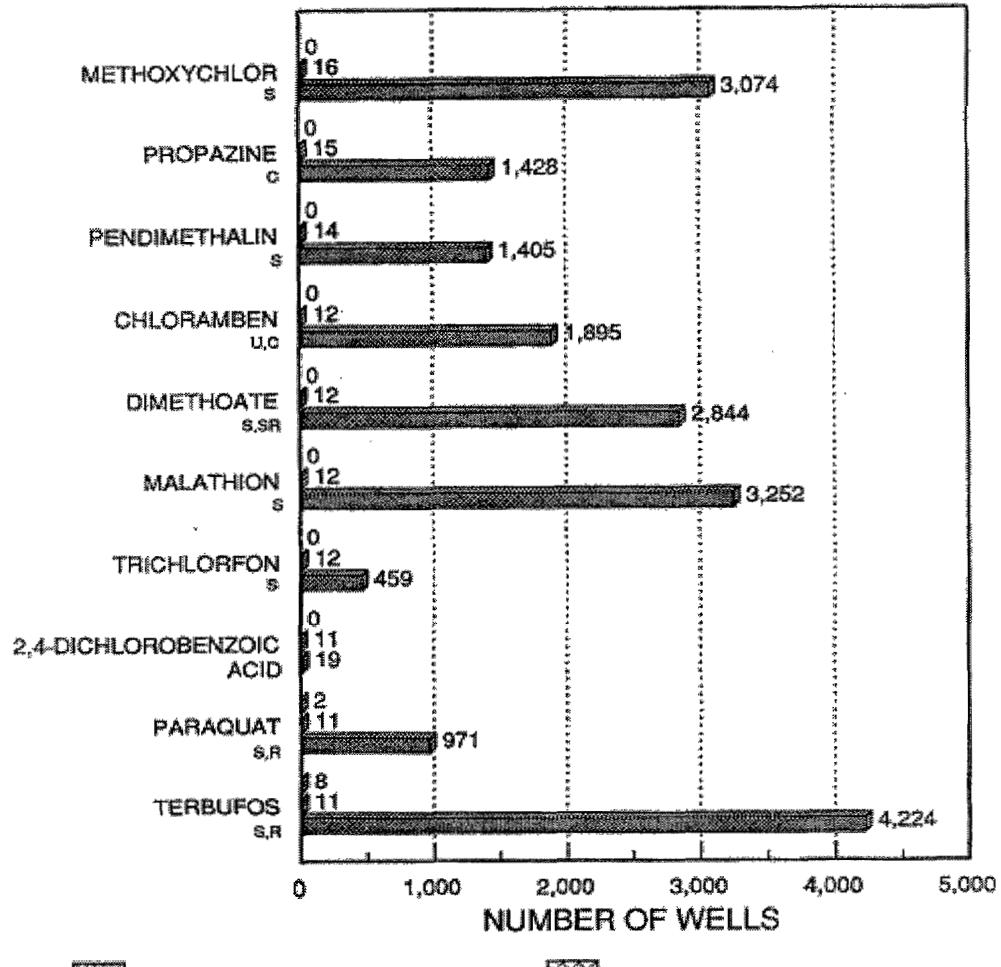
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NS-40

000060

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



[diagonal lines] WELLs WITH DETECTIONS >= MCL [diagonal lines] WELLs WITH DETECTIONS

[solid black square] TOTAL WELLs SAMPLED

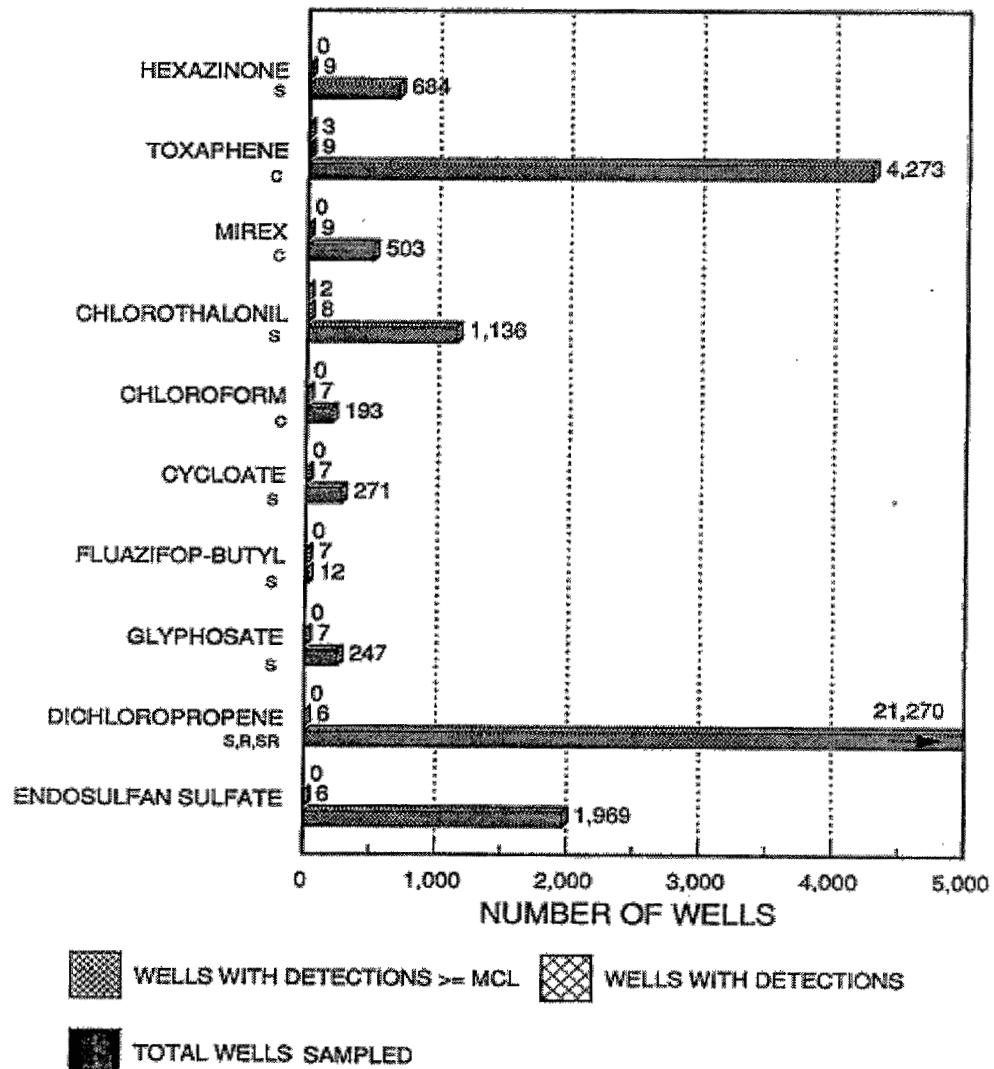
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NS-41

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DESCENDING BY NUMBER OF WELLS WITH DETECTIONS

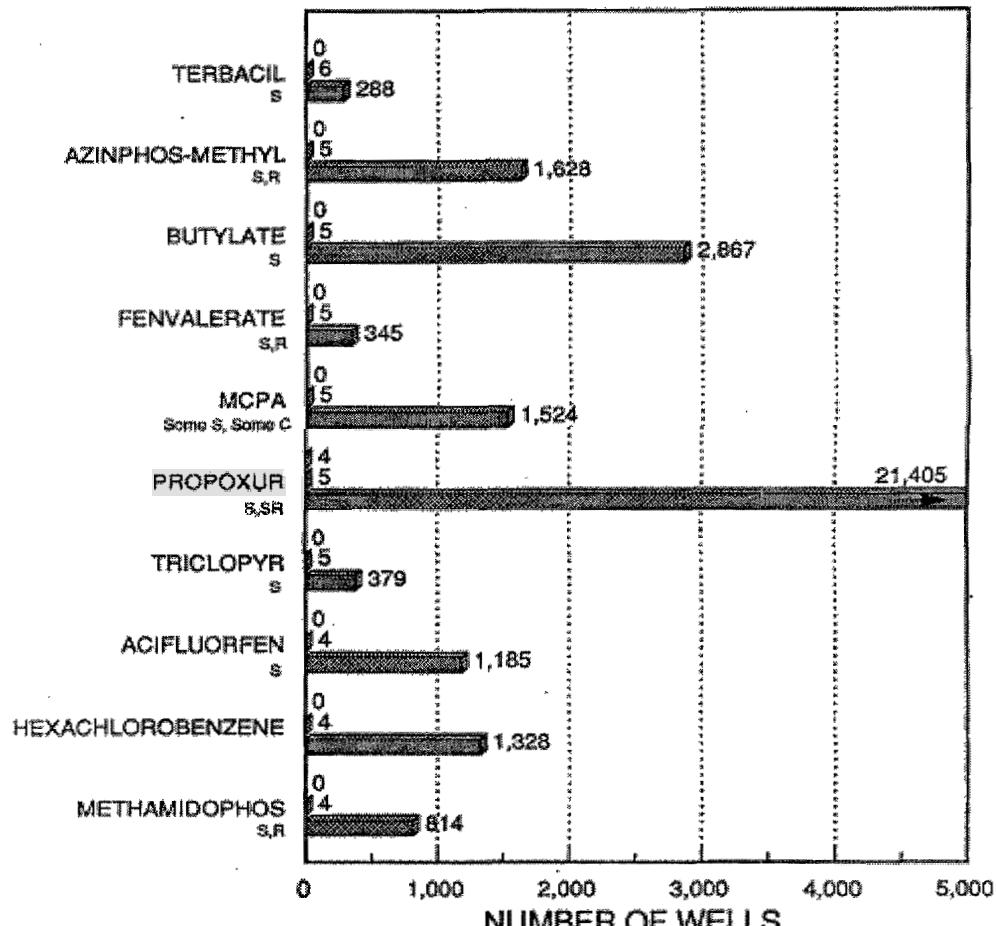


000062

NS-42

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



WELLS WITH DETECTIONS >= MCL



WELLS WITH DETECTIONS



TOTAL WELLS SAMPLED

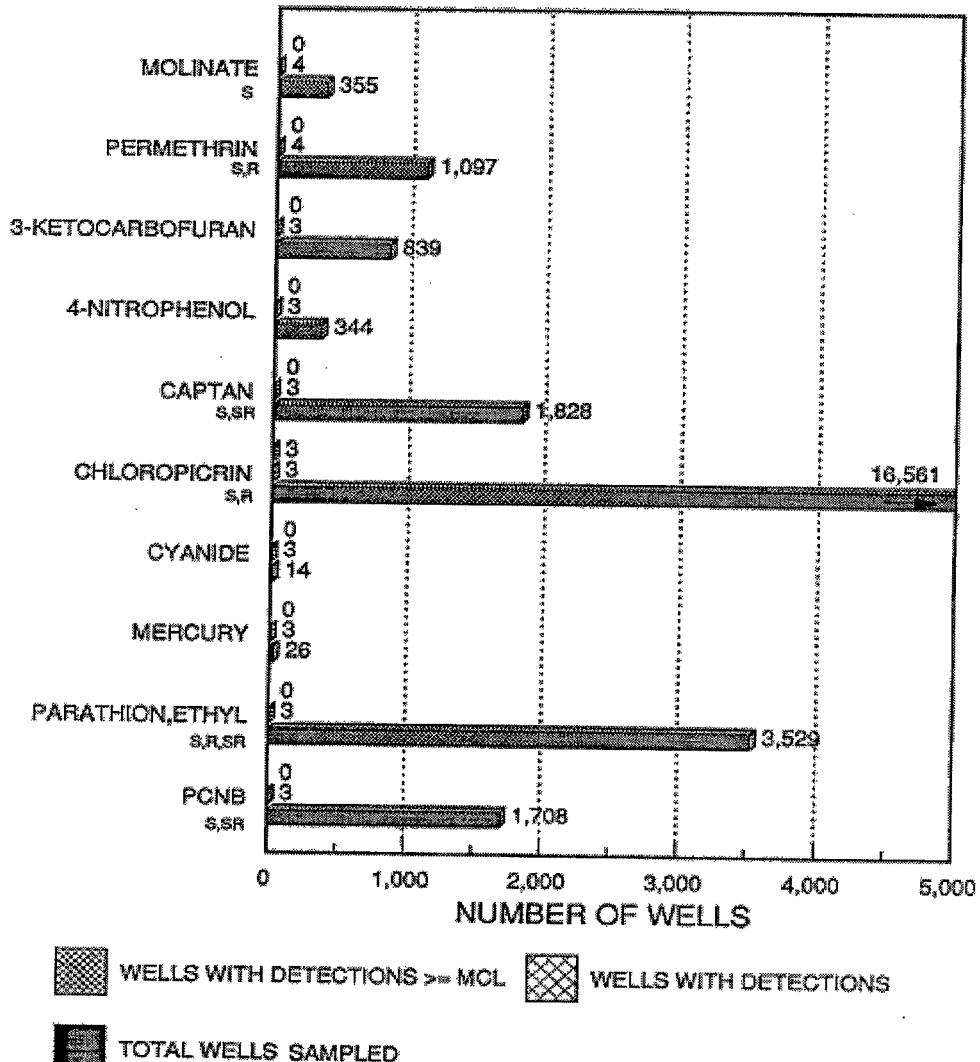
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NS-43

000063

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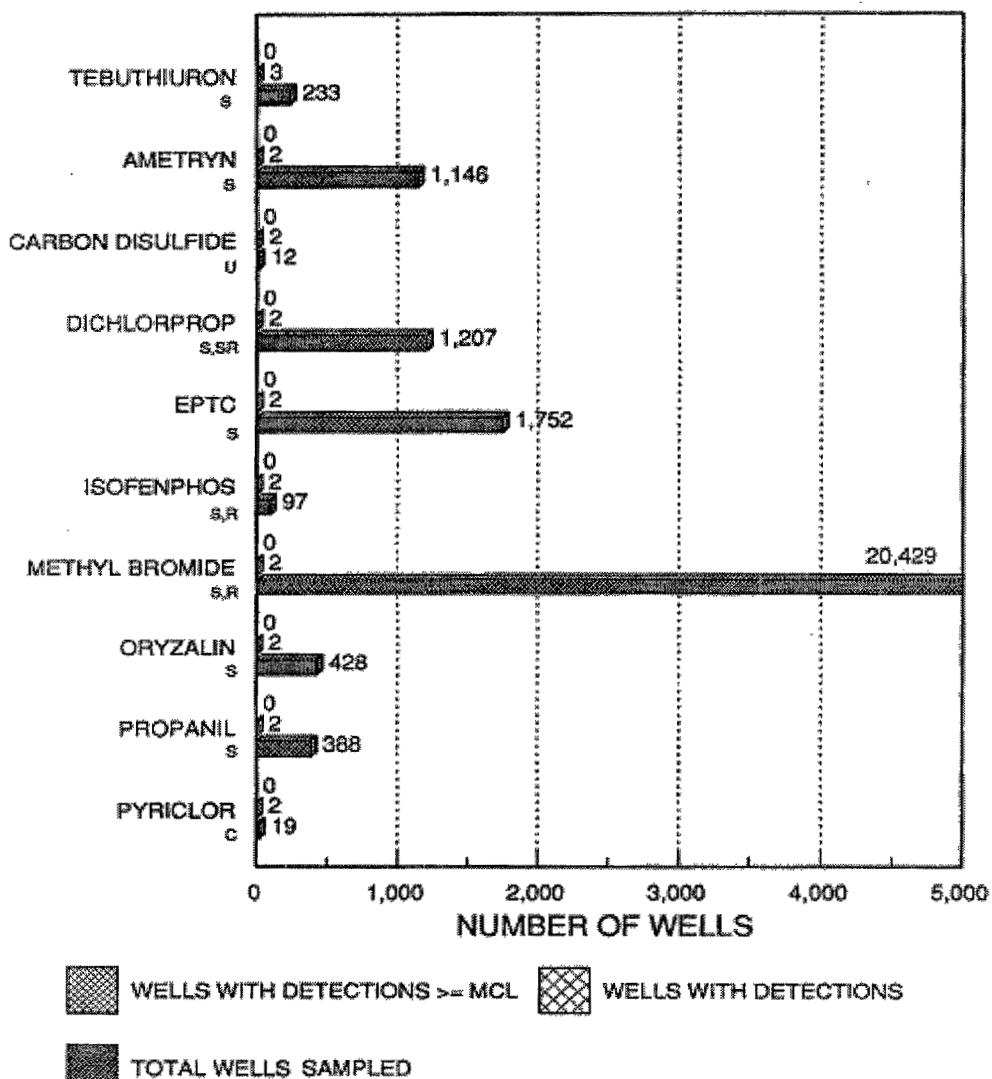
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MS-44

000064

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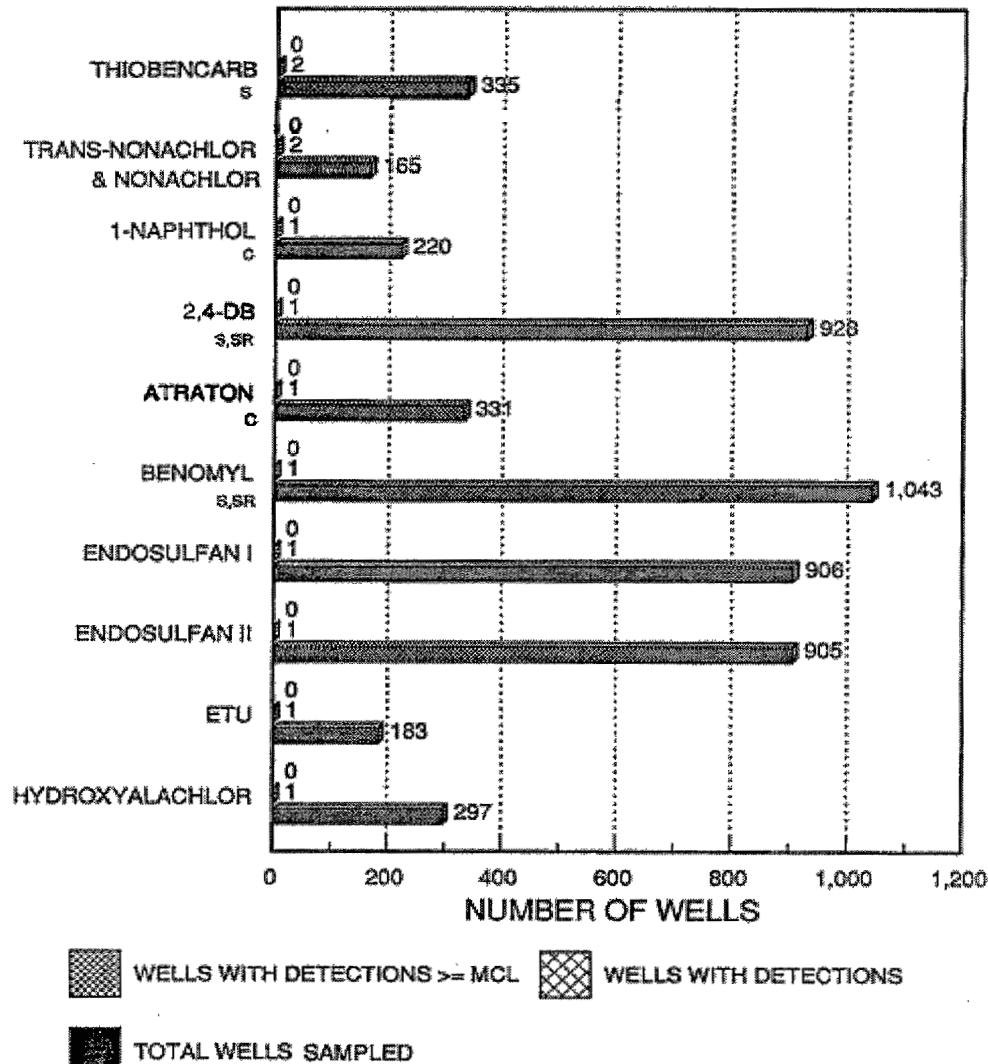


NS-45

000065

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



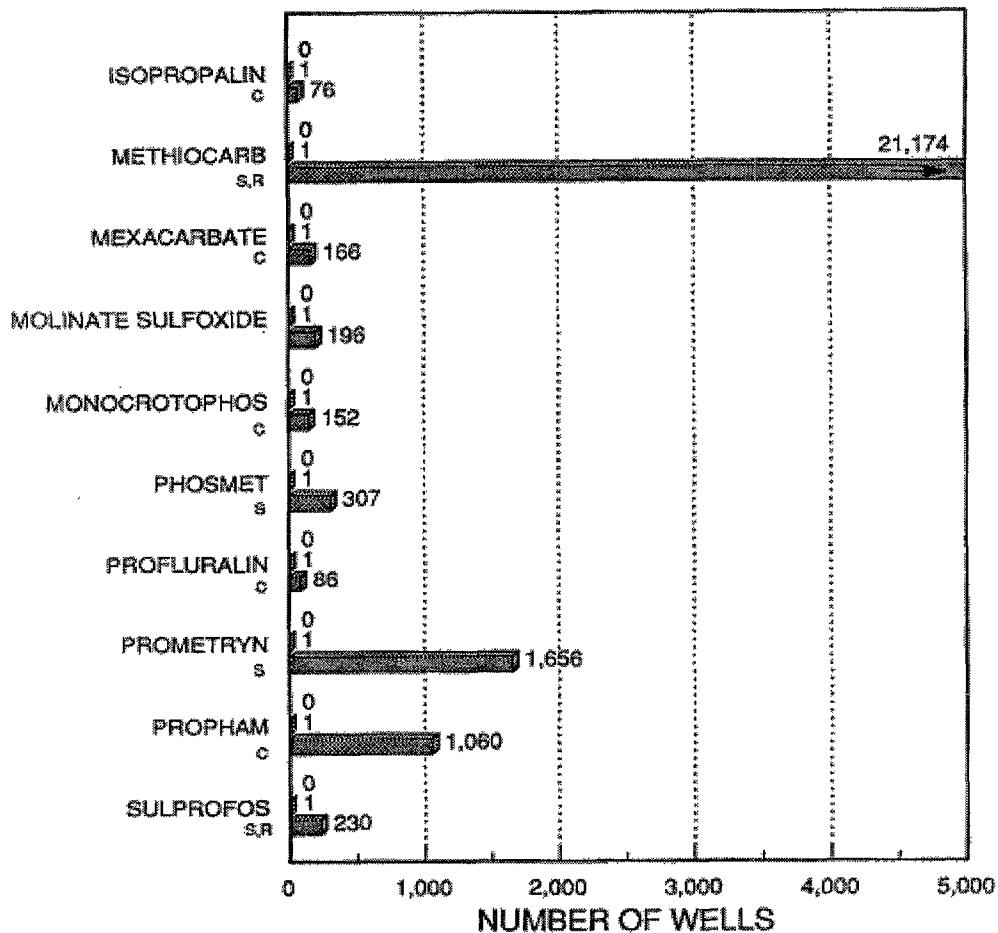
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NS-46

000066

PESTICIDE DETECTIONS

DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



NUMBER OF WELLS



WELLS WITH DETECTIONS >= MCL



WELLS WITH DETECTIONS <> MCL



TOTAL WELLS SAMPLED

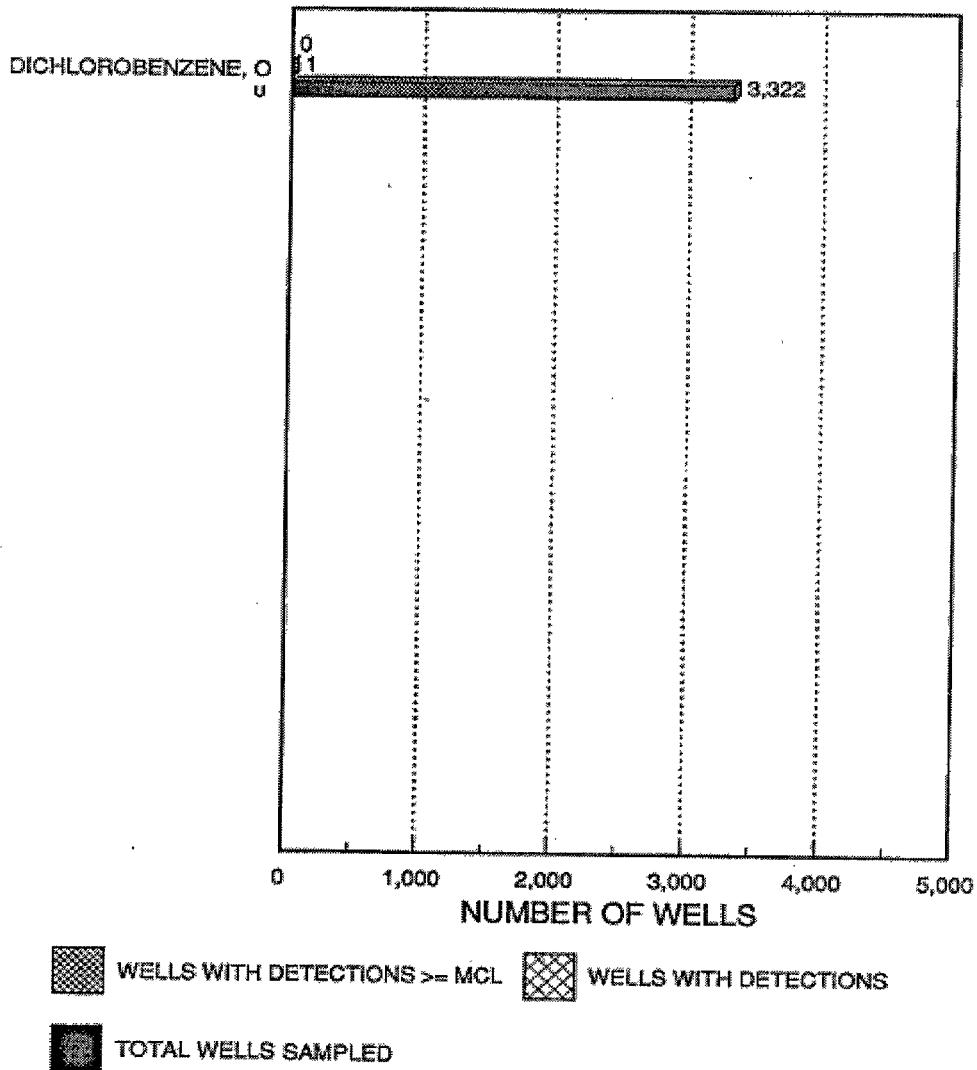
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NS-47

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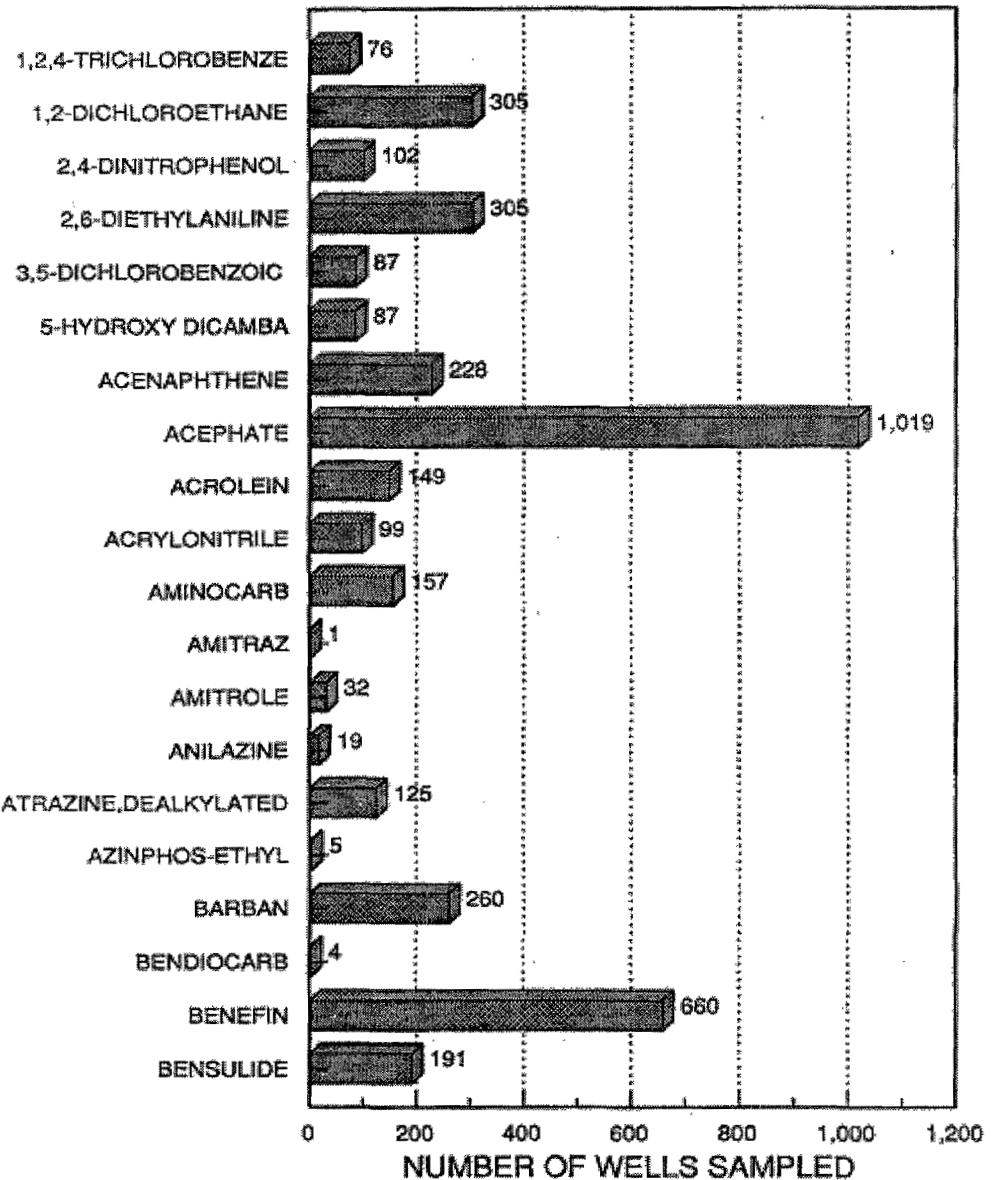
DESCENDING BY NUMBER OF WELLS WITH DETECTIONS



NS-48

000068

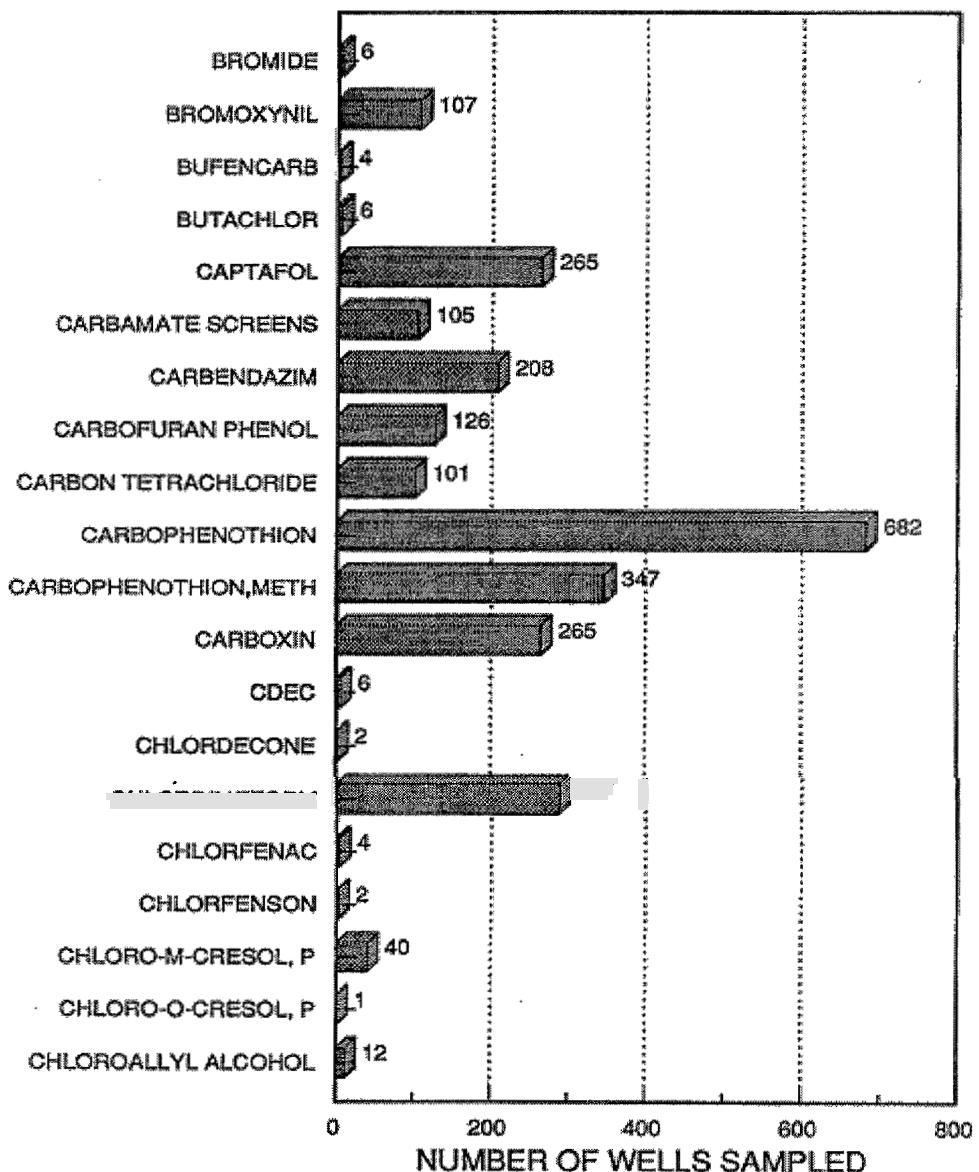
PESTICIDES WITH NO DETECTIONS



NS-49

000069

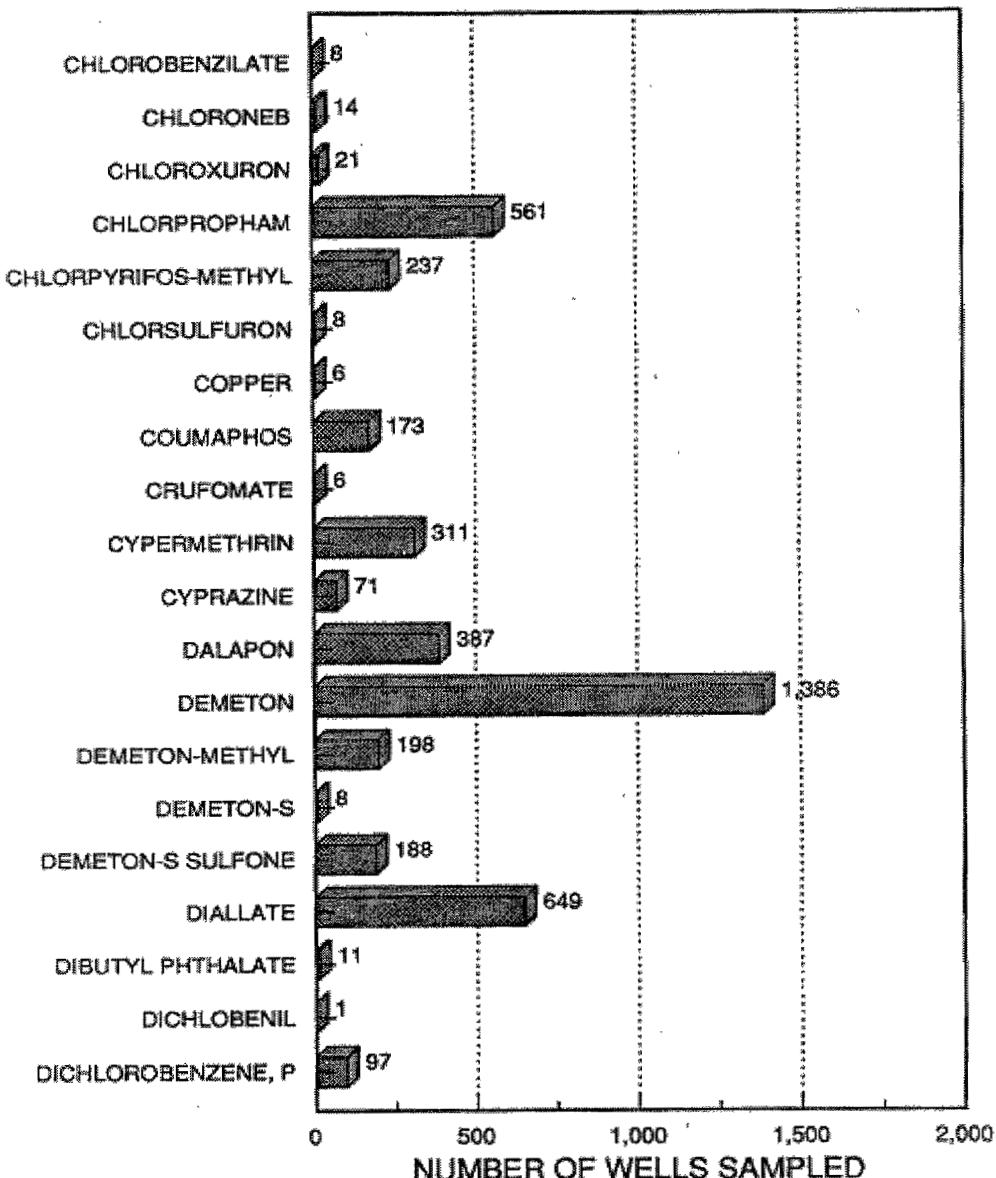
PESTICIDES WITH NO DETECTIONS



NS-50

000070

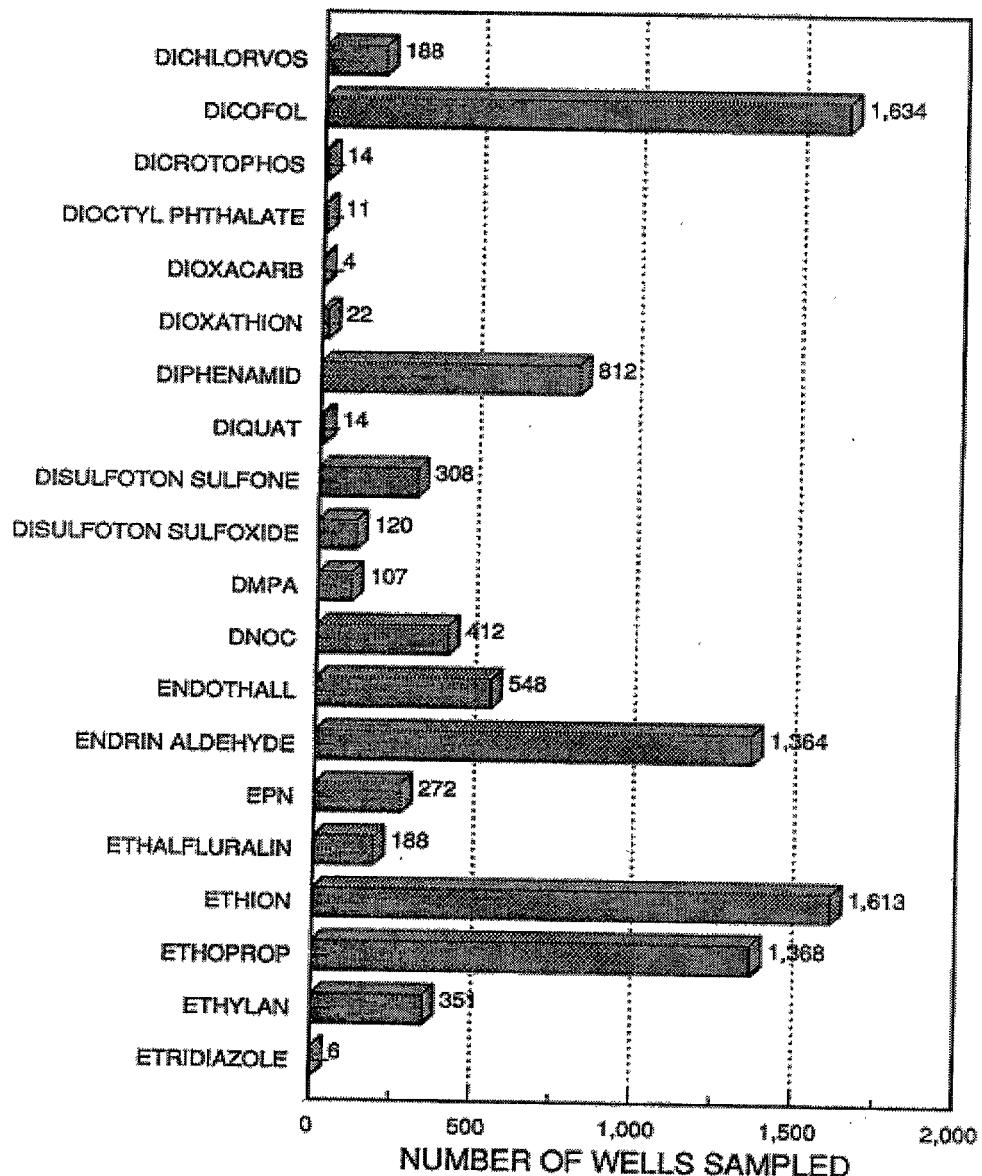
PESTICIDES WITH NO DETECTIONS



NS-51

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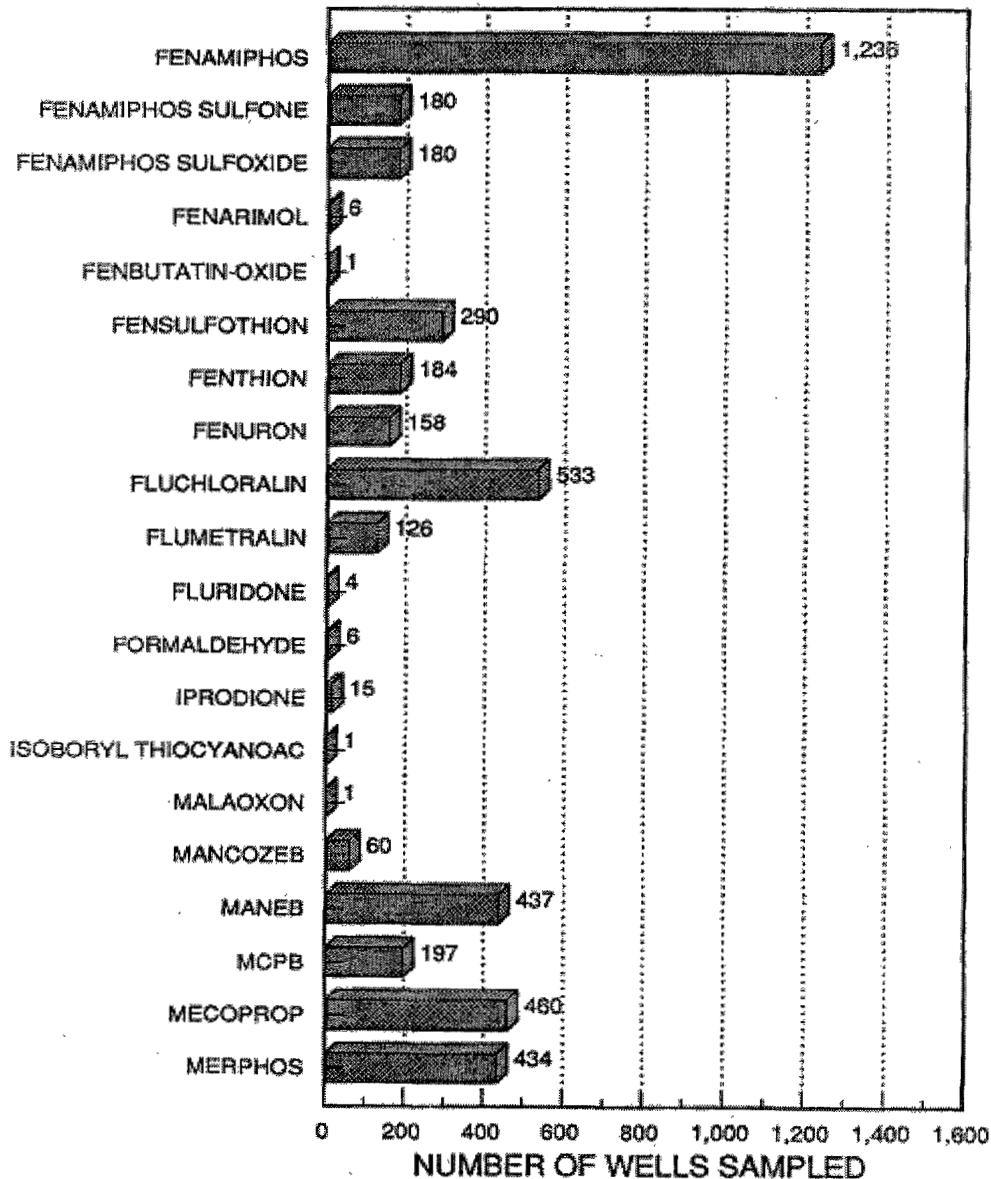
PESTICIDES WITH NO DETECTIONS



NS-52

000072

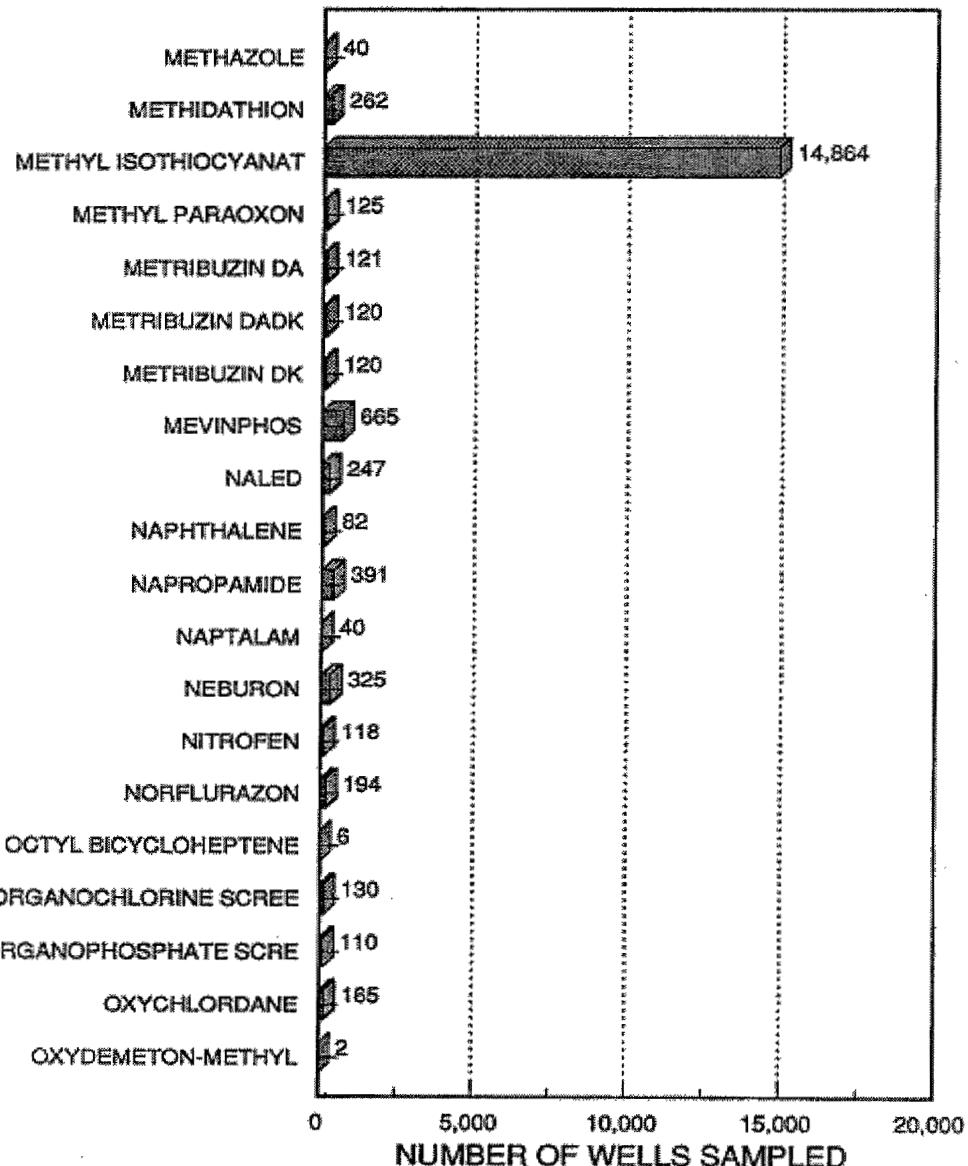
PESTICIDES WITH NO DETECTIONS



NS-53

000073

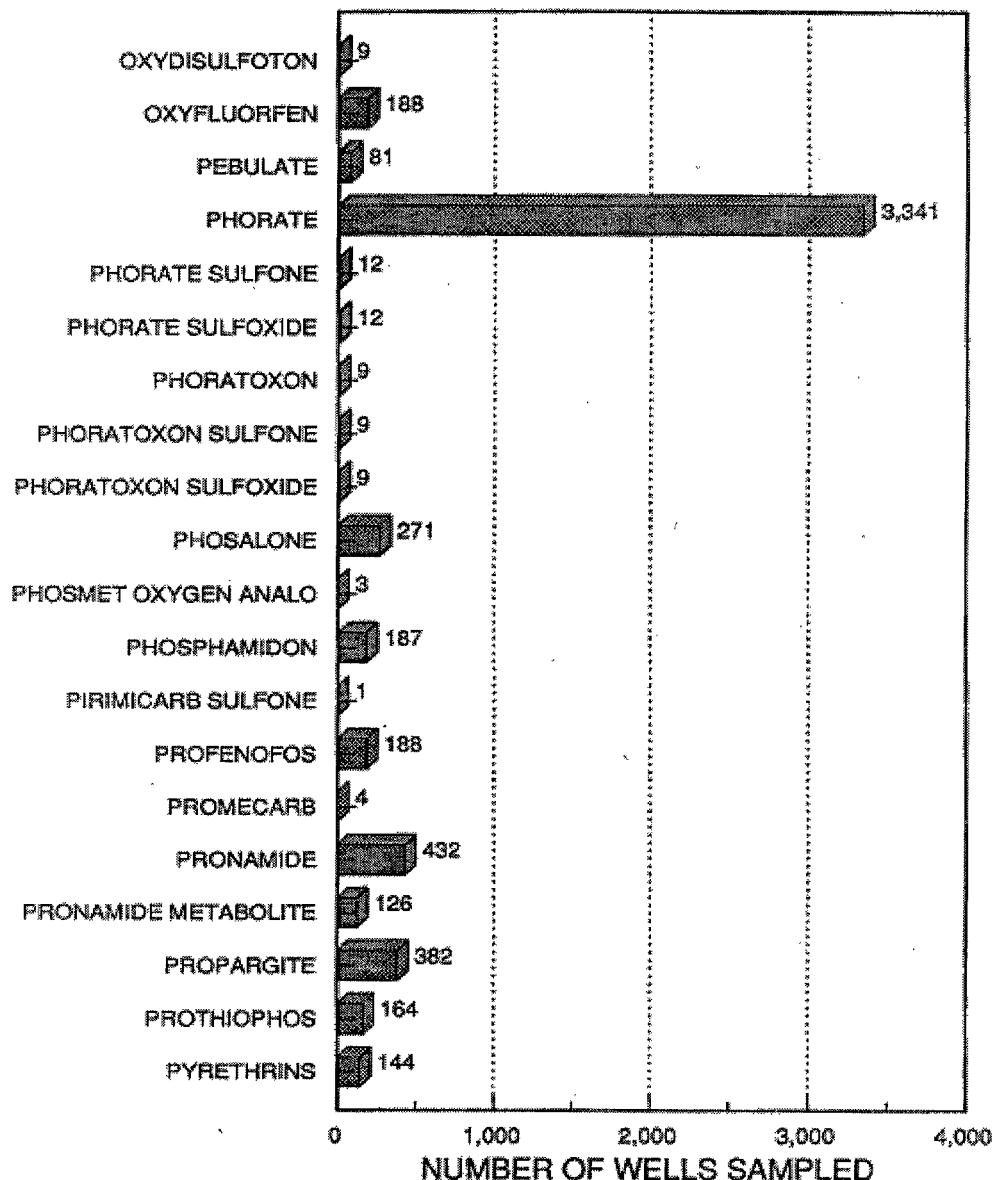
PESTICIDES WITH NO DETECTIONS



NS-54

000074

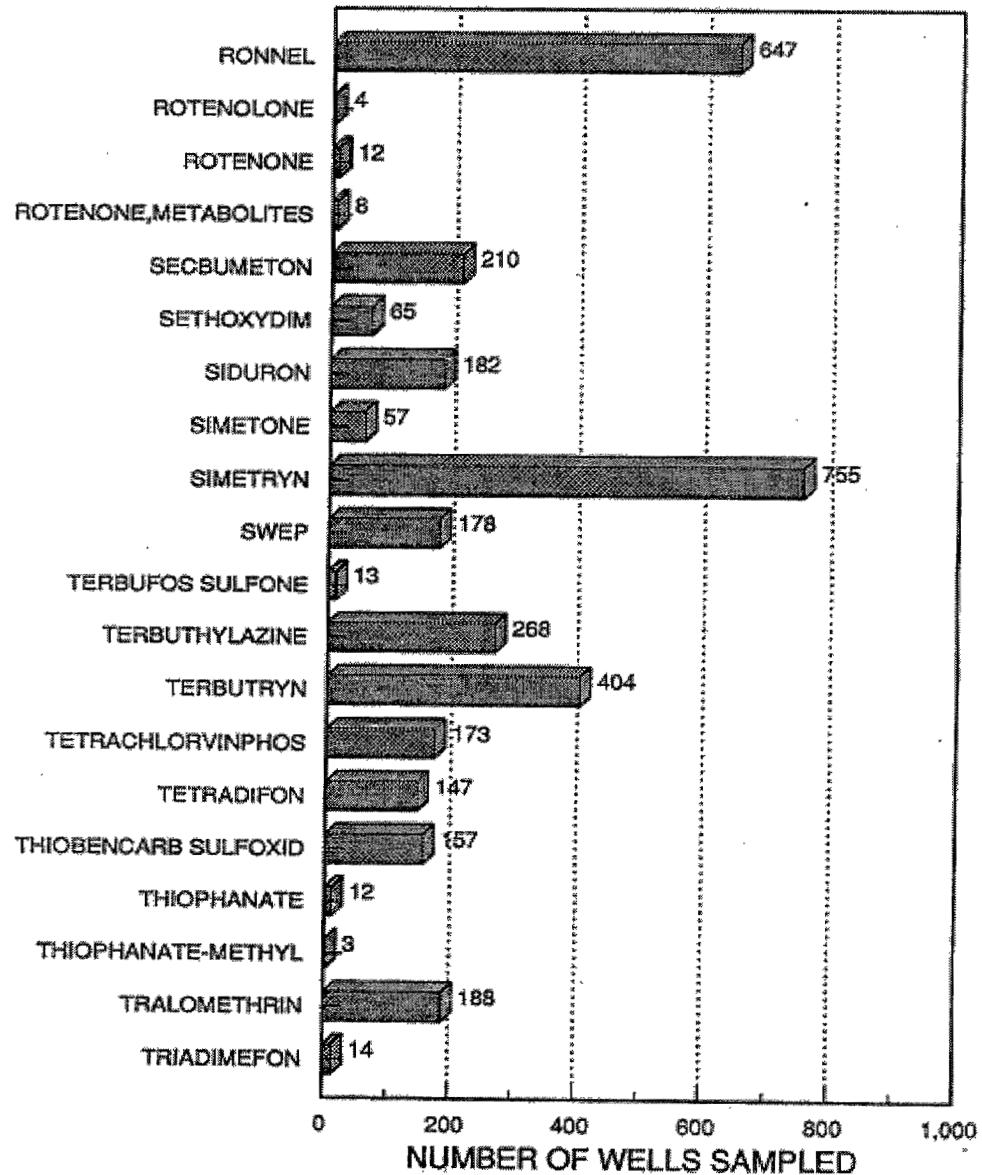
PESTICIDES WITH NO DETECTIONS



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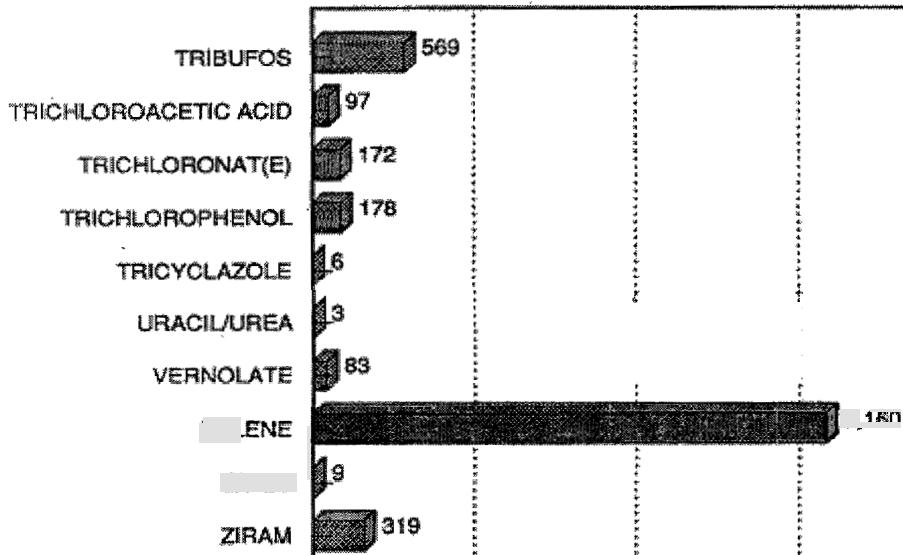
PESTICIDES WITH NO DETECTIONS



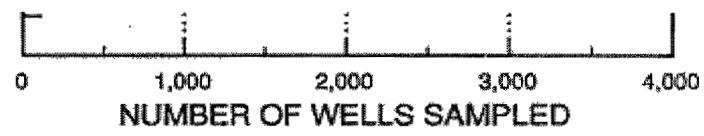
NS-56

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PESTICIDES WITH NO DETECTIONS



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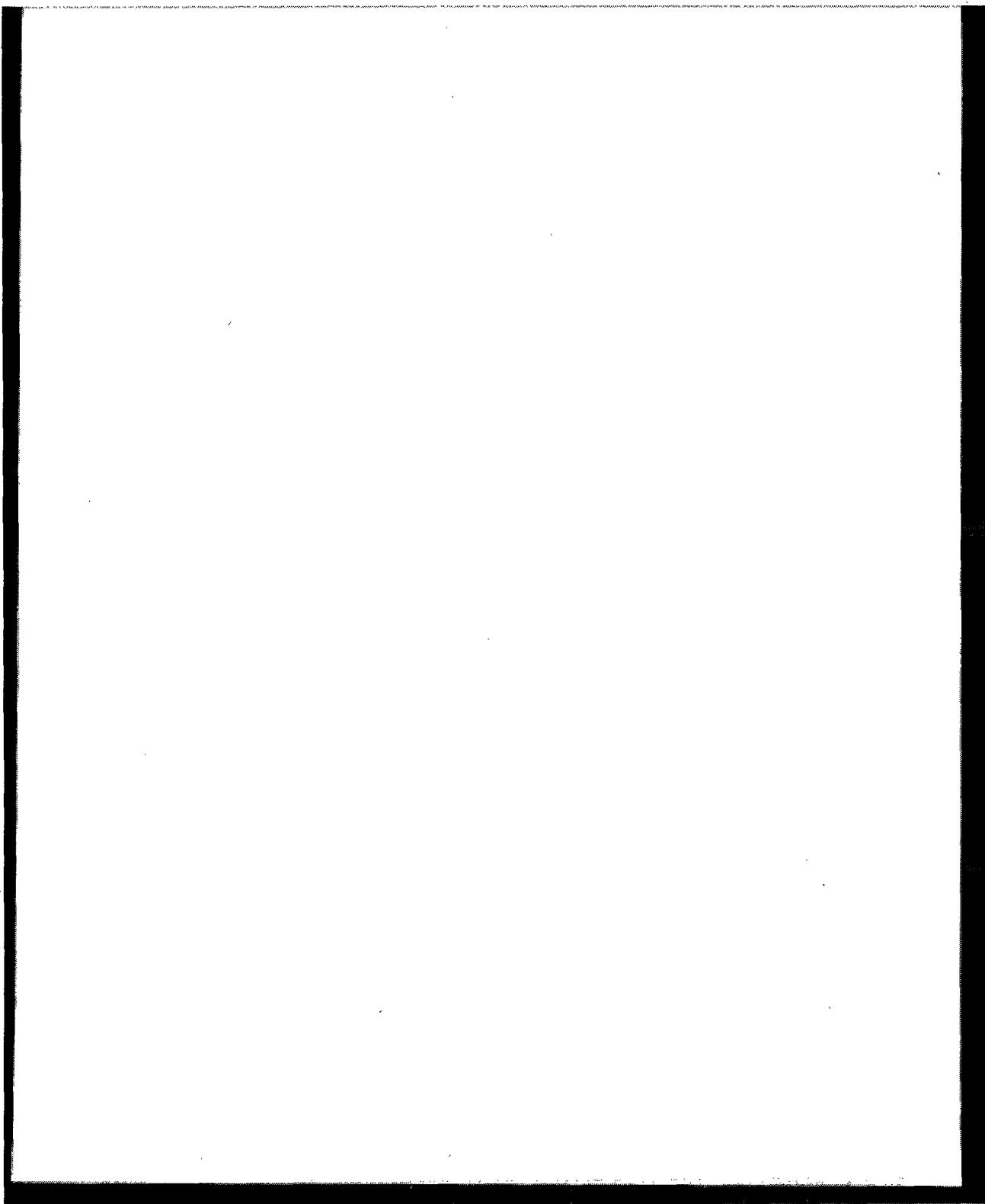
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TABLE I: WELL DATA BY PESTICIDE

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MOL OR HA LEVELS	STATE	DATES	WELL RESULTS			RANGE OF CONCEN- TRATIONS (ug/l)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	= MCL + MCL	
Aldrin	T	5	HI	1989-90	119	0	0	trace
				1987-88	90	0	1	
				1984-85	11	0	0	
TOTAL DISCRETE WELLS					220	0	1	trace
1,1,1-Trichloroethane	S	5	HI	1983-87	91	0	0	
				1989-90	97	0	0	
				1985-87	117	0	0	
TOTAL DISCRETE WELLS					305	0	0	
Dichloropropane			HI	1980-84	9	0	3	0.110- 0.300
TOTAL DISCRETE WELLS					9	0	3	0.110- 0.300
1,2-Dichloro- propane	C	5	CT	1982-89	5473	26	56	0.1-160.0
				1984	82	7	6	0.05- 290.0
				1989-91	15666	44	86	0.520- 50.200
				1983-87	95	0	2	0.067- 0.289
				1985	239	30	52	0.03-51.0
				1979-81	50	10	8	1-440
				1989-90	97	0	0	

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or DA (ug/L) Lifetime	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	≥ MCL < MCL	
(1,2-Dichloro-propane)			NY	< 1989	73	0	1	0.01
				1983-85	17	1	0	5-10
				1985-87	117	0	9	1.4-4.0
				1988-89	81	5	7	0.3-24
TOTAL DISCRETE WELLS					21,390	123	227	0.01-440
1,2,4-Trichlorobenzene	U.C.	2	CA	1984-87	76	0	0	
TOTAL DISCRETE WELLS					76	0	0	
2,4-D	SOP Pre SOP Post SOP Pre SOP Post	70	AL AR CA CT FL GA HI IA IL IN KS	1987	14	0	0	
				1988	8	0	0	
				1979-89	1510	0	4	0.500-46,000
				1987-89	129	0	4	0.01-0.03
				1988	2	0	0	
				1984-91	179	0	0	
				1980-86	11	0	0	
				1984-89	739	0	4	0.150-0.260
				1985-86	466	0	0	
				1986-90	214	0	4	0.15-22.0
				1986-87	214	0	24	0.01-1.3

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR EA (ppm/l)	STATE	DATES	WELL RESULTS		RANGE OF CONCENTRATIONS (ppm)	
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS		
					S/NL	< MCL		
(2,4-D)			MA	1986-87	19	0	1	0.34
			ME	1986-87	62	0	0	
			NH	1985-90	754	0	6	0.07-4.2
			ND	1986-90	282	0	6	0.03-1.0
			MS	1982	143	0	2	0.0079- 0.0495
			MT	1984-90	84	0	5	0.11-1.7
			ND	1985	77	0	0	
			NH	1986	20	0	0	
			NJ	1986-88	81	0	0	
			NY	1985-87	139	0	2	0.5-0.56
			OK	1986	22	0	0	
			OR	1985-87	151	0	0	
			PA	1987	25	0	0	
			RI	1986	60	0	0	
			SD	1984-90	99	0	17	0.02-1.46
			TN	1986-87	23	0	0	
			TX	1983-88	229	0	2	6.58-57.1
			VA	1986-90	196	2	47	0.009- 4.74
			VT	1986-87	4	0	0	
			WA	1986	81	0	0	

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000083

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MCL-LIKE	STATE	DATES	WELL RESULTS			RANGE OF CONCEN-TRATION (ug/L)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	% HCL	
(2,4-D)			NY	1987-90	105	0	11	0.01-0.14
TOTAL DISCRETE WELLS					6,142	2	139	0.0079-57.1
2,4-DP	5.5R		CA	1988-89	47	0	0	
			FL	1986	4	0	0	
			IL	1987-88	161	0	0	
			MS	1982-90	263	0	0	
			MT	1984-90	84	0	0	
			NC	1985-87	61	0	0	
			TX	1987-88	187	0	1	0.22-0.23
			WA	1988	61	0	0	
TOTAL DISCRETE WELLS					928	0	1	0.22-0.23
2,4-Dichloro- benzoic Acid (DCBA)			MA	1986-87	19	0	11	0.00-298.0
TOTAL DISCRETE WELLS					19	0	11	0.00-298.0
2,4-Dinitrophenol	U.S.		CA	1984-87	102	0	0	
TOTAL DISCRETE WELLS					102	0	0	
2,4,5-T	PC-357	70	CA	1984-89	109	0	2	0.02-0.21
			CA	1987-89	124	0	2	0.06-0.4

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	HCL or EA (2/9/13) Lifeline	STATE	DATES	WELL RESULTS		RANGE OF CONCEN- TRATIONS (ug/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	
(2,4,5-T)			IL	1982-86	8	0	0
			IA	1988-89	678	0	0
			IN	1987-88	161	0	0
			KS	1984-85	107	0	1
			LA	1987	3	0	0
			ME	1986-87	62	0	0
			VA	1985-90	649	0	1
			MD	1986-90	282	0	19
			MS	1982-90	263	0	0
			MI	1984-90	84	0	0
			NJ	1986-88	81	0	0
			TN	1986-87	23	0	0
			TX	1983-88	198	0	2
			VA	1989-90	126	0	2
			WA	1988	81	0	0
			WV	1987	27	0	0
TOTAL DISCRETE WELLS					3,066	0	29
2,4,5-TD (2,3,4,5-T)	DISCRETE	14	AL	1987	14	0	0
			CA	1979-89	1045	0	1
			CA	1987-89	124	0	1
							0.02

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000085

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR RA (1971) Lifetime	STATE	DATES	WELL RESULTS			RANGE OF CONCEN- TRATIONS (1971)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	≥ MCL	
(2,4,5-TP)			GA	1984-91	179	0	0	
			HI	1980-86	11	0	0	
			IA	1981-86	88	0	5	0.07-0.48
			IL	1985-86	466	0	0	
			IN	1987-88	161	0	0	
			KS	1984-86	107	0	0	
			ME	1986-87	62	0	0	
			MH	1985-90	649	0	2	0.10-0.26
			MD	1987	37	0	0	
			MS	1982-90	263	0	0	
			MJ	1984-90	84	0	0	
			NJ	1986-88	81	0	0	
			NY	1985-87	139	0	0	
			OR	1985-87	56	0	1	0.023
			TX	1983-88	42	0	0	
			VA	1987-90	160	0	18	0.002- <3.0
			WA	1988	81	0	0	
			WY	1987	27	0	0	
TOTAL DISCRETE WELLS					3,876	0	26	0.002- <3.0

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000086

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MA (ug/L) Lifetime	STATE	DATES	WELL RESULTS		RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	
Acylophane	S		CA	1986-87	228	0	0
TOTAL DISCRETE WELLS					228	0	0
Acephate	S		CA	1984-89	793	0	0
			FL	1986-87	36	0	0
			CA	1986	2	0	0
			TX	1987-88	188	0	0
TOTAL DISCRETE WELLS					1,019	0	0
Acetochlor	S		AR	1985-87	111	0	0
			CA	1986	4	0	0
			CA	1984-91	176	0	0
			IA	1988-89	678	0	0
			LA	1987	3	0	0
			ME	1989-90	120	0	1
			VA	1986-90	12	0	3
			WA	1988	81	0	0
TOTAL DISCRETE WELLS					1,185	0	4
Aldicarb	R/R		CA	1986	40	0	0
			CA	1984-87	10	0	0

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000087

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL & RA (ug/l) Lifetime	STATE	DATES	WELL RESULTS			RANGE OF CONCEN-TRATIONS (ug/l)	
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS			
						< MCL	≥ MCL		
(Acrolein)			MS	1989-90	99	0	0		
TOTAL DISCRETE WELLS					149	0	0		
Acrylonitrile	C.P., SR ^a		MS	1989-90	99	0	0		
TOTAL DISCRETE WELLS					99	0	0		
Alethicide	S.R., SR ^a	2	AB	1985-87	111	1	0	5.8	
			CA	1984-89	866	0	2	0.10-1.50	
			CT	1987-89	136	1	1	0.1-11.0	
			DE	1984	9	6	3	0.1-15	
			FL	1909-91	15334	2	8	0.086-89.500	
			GA	1984-91	76	0	0		
			IA	1983-89	886	6	21	0.020-70.000	
			IL	1983-88	548	3	33	0.011-18.0	
			IN	1985-90	210	3	2	0.23-13.9	
			KS	1984-87	214	2	1	0.88-2.4	
			LA	1987	7	0	1	0.28	
			MA	1985-88	218	0	5	0.2-0.92	
			MD	1983-86	45	0	17	0.1-1.0	
			ME	1986-87	71	0	3	trace	
			MS	1989-90	120	0	0		

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or ND (ug/l) Effective	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/l)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	% MCL	
(Aldachlor)			NH	1985-90	754	5	38	0.03-9.76
			ND	1986-90	325	2	13	0.01-22.0
			NC	1990-91	335	0	73	0.1-1.0
			ND	1985-87	113	0	4	0.05-1.2
			NE	< 1989	2069	2	14	0.02-20.6
			NH	1986	19	0	0	
			NJ	1986-88	88	1	8	0.1-13.0
			NY	1985-87	214	7	9	0.04-16
			OH	1988-89	599	4	29	0.005-9.380
			OK	1986	1	0	0	
			OR	1985-87	137	0	0	
			PA	1983-87	91	2	7	0.08-20.0
			RI	1986	84	0	0	
			SD	1984-90	99	0	19	0.06-1.26
			TN	1986-87	11	0	0	
			TX	1986-88	219	0	0	
			VA	1986-90	138	0	31	0.01-1.314
			VT	1986-91	438	0	0	
			WA	1988	81	0	0	

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000089

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or RA (ug/l) Lifetime	STATE	DATES	WELL RESULTS		RANGE OF CONCENTRATIONS (ug/l)	
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS		
(Aldchlor)			WI	1982-89	1327	52	26	0.1-3000.0
TOTAL DISCRETE WELLS					25,993	99	368	trace-3000
Aldchlor screen			OH	1990	863	2	74	0.100-18,500
TOTAL DISCRETE WELLS					863	2	74	0.100-18,500
2,6-diethyl-aniline (Aldchlor-metabolite)			IA	1983-84, 1988-89	305	0	0	
TOTAL DISCRETE WELLS					305	0	0	
Hydroxylalchlor			IA	1988-89	297	0	1	0.910
TOTAL DISCRETE WELLS					297	0	1	0.910
Aldicarb	S, R, SRP	3	AL	1988	10	0	0	
			AK	1986-87	83	0	0	
			AZ	1986	40	0	0	
			CA	1979-89	1054	18	6	0.13-49.00
			DE	1984-85	10	1	1	1.0-7.0
			FL	1909-91	16955	66	3	0.14-1264.00
			GA	1984-91	45	16	0	10.00
			ID	1980	15	0	0	

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000090

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL AND EA (ug/L) Lifetime	STATE	DATES	WELL RESULTS		RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	
(Aldicarb)			IL	1983	25	0	0
			IN	1987	1	0	0
			MA	1986-87	22	9	7
			ME	1980-89	445	30	<5 to >10
			NH	1985-90	749	1	0.5-30.6
			MD	1982-90	263	0	
			MT	1984-90	80	0	
			NC	1982-91	439	2	1.0-28.2
			ND	1985	16	0	
			NE	1985-86	15	1	1.0-3.0
			NH	1986	14	0	
			NJ	1983-88	145	6	3.0-50.0
			NY	1980-91	20955	1723	0.08-515.0
			OK	1986	5	0	
			OR	1985-87	117	1	3
			RI	1984-89	1724	51	1.0-63.0
			SC	1985	6	0	
			TX	1987-88	182	0	
			VA	1988	61	0	

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000091

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OF RA (90/10 Lifetime)	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/l)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	% POS.	
(Aldicarb)			WI	1980-88	290	85	12	0.61-221
TOTAL DISCRETE WELLS					43,786	2,010	992	0.08-1264.00
Aldicarb sulfone		2	CA	1985-89	73	1	9	0.10-4.60
			FL	1989-90	15903	24	25	0.07-61.00
			HI	1985-90	100	0	0	
			MS	1989-90	119	0	0	
			MT	1984-90	80	1	5	0.15-3.8
			NJ	1986-88	90	4	8	trace-4.4
			NY	1980-91	20955	4529	440	0.01-153.00
			RI	1984-86	11	7	0	3-56
			TX	1986-88	213	0	0	
			WA	1988	81	0	0	
			WI	1982	27	17	0	4.00-10.00

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TOTAL DISCRETE WELLS					37,652	4,583	487	trace-153.00
Aldicarb sulfoxide			4	CA	1987-89	72	4	5
				FL	1990-91	15903	25	17
				NN	1985-90	100	0	0

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MA (ug/L) Lifetime	STATE	DATES	WELL RESULTS			RANGE OF CONCEN-TRATIONS (ug/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	% MCL	
(Aldicarb sulfoxide)			MS	1989-90	119	0	0	
			MI	1984-90	80	0	5	0.28-1.8
			NJ	1985-88	90	1	8	trace-5.3
			NY	1980-91	20955	3414	1585	0.01-266.00
			RI	1984-85	11	7	0	6-92
			TX	1987-88	182	0	0	
			WA	1988	81	0	0	
TOTAL DISCRETE WELLS					37,593	3,451	1,540	trace-1030.00
Aldicarb sulfide		2	FL	1985-86	354	1	3	0.70-12.3
			GA	1983-4	322	62	6	1.0-181.0
			RI	1984	17	3	0	3-6
TOTAL DISCRETE WELLS					693	66	9	,70-181.00
Aldrin	C, GR C		AL	1987	13	0	0	
			CA	1975-89	1156	1	0	21.00
			CT	1987-89	122	0	0	
			DE	1982-86	12	0	0	
			IA	1984-6	59	0	0	
			IL	1983-86	491	0	7	0.01-0.11

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	NO. OF HA (ACRES) Liters/ha	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SURVEYED	N. OF POSITIVE WELLS	< MCL	
(Aldrin)			IN	1985-90	191	0	3	0.060-10.0
			IL	1984-86	130	0	0	
			MD	1986	4	0	0	
			MS	1982-90	263	0	1	
			MJ	1984-86	22	0	0	
			MJ	1985-88	186	0	0	
			NJ	1985-87	122	0	0	
			SC	1974-76	73	0	50	0.01-0.191
			TH	1987	1	0	0	
			TX	1983-88	199	0	0	
TOTAL DISCRETE WELLS					3,046	1	61	0.0052-21
Ametryn		15-40	CA	1984-89	255	0	0	0.200
			CT	1987-89	140	0	0	
			FL	1988	5	0	0	
			HI	1984-85	65	0	1	
			IA	1987-88	161	0	0	
			KS	1984	27	0	0	
			MS	1989-90	120	0	0	
			NE	< 1989	104	0	1	
			NJ	1985-88	183	0	0	

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NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MA LEVEL IN LITER/HECTARE	STATE	DATES	WELL RESULTS		RANGE OF CONCEN- TRATIONS (μ g/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	
(Ametryn)			CA	1988	81	0	0
TOTAL DISCRETE WELLS					1,146	0	2
Antoscept	S, R, C		CA	1984-88	157	0	0
TOTAL DISCRETE WELLS					157	0	0
Amitraz	S, M, R		CA	1985	1	0	0
TOTAL DISCRETE WELLS					1	0	0
Bifenthrin	S, R		CA	1984-88	32	0	0
TOTAL DISCRETE WELLS					32	0	0
Butachlor	S		IL	1986-87	19	0	0
TOTAL DISCRETE WELLS					19	0	0
Arsenic		50	CA	1985-87	4	0	0
			TX	1983-90	247	50	41
			IL	1988	20	0	15
TOTAL DISCRETE WELLS					271	50	56
							1.6-680.0

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000095

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR HA (EPA/LIFETIME)	STATE	DATES	WELL RESULTS			RANGE OF CONCEN-TRATIONS (E.G./L)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	> MCL	
Atraton	C	--	CA	1984-89	113	0	0	-
				1987-88	161	0	0	
				1984	27	0	0	
				1985	30	0	1	
TOTAL DISCRETE WELLS					331	0	1	0.1
Atrazine	S,S	-	AL	1988	10	0	4	0.1-0.25
				1985-87	111	1	0	0.5
				1984-90	2301	4	121	0.020-6.500
				1985	4	0	4	<0.80-2.3
				1987-89	139	4	28	0.1-9.7
				1984-86	36	20	11	0.1-54
				1989-91	15333	0	0	-
				1984-91	76	0	0	-
				1983-86	191	1	36	0.035-4.100
				1981-89	925	12	128	0.010-13.000
				1985-88	474	1	10	0.007-4.8
				1985-91	222	4	4	0.10-49.0
				1984-86	130	3	3	0.1-7.4
				1987	1	0	0	-

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000096

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MDA (1971) Lifetime	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ppb)	
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS			
						< MCL	≥ MCL		
(Atrazine)			AL	1987-88	73	0	5	0.3-1.4	
			HI	1983-86	45	4	14	0.1-95.0	
			ME	1986-87	71	0	0		
			MI	1987-88	39	11	1	1-210	
			MI	1985-90	754	17	258	0.01-42.4	
			MO	1984-90	325	9	22	0.1-150.0	
			MS	1989-90	120	0	0		
			MT	1987-89	22	0	1	0.1	
			NC	1990-91	335	0	76	0.05->1.0	
			ND	1985-87	106	0	0		
			NE	1975-89	2260	22	281	0.01-107.2	
			NH	1986	19	0	0		
			NJ	1985-88	187	0	14	0.1-8.9	
			NY	1985-87	232	18	13	0.12-1500	
			OK	1988-89	599	3	111	0.001-5.507	
			OR	1986	7	0	0		
			PA	1985-87	56	0	2	0.6-2.3	
			RI	1986	91	3	53	trace-20.0	
			SD	1984-90	24	0	5	0.06-0.11	
					49	1	1	0.25-5.40	

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000097

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	WELL OR DRILL SITE	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (PPB)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	S/NOL < 1 MC	
(Atrazine)			IN	1986-87	11	0	2	0.03-0.08
			TX	1986-90	279	3	7	0.21-200.3
			VA	1986-90	138	4	12	0.03-25.56
			VT	1986-91	438	5	11	1.0-24.3
			WA	1988-89	81	0	1	0.4
			WI	1982-89	635	22	101	0.04-109.00
TOTAL DISCRETE WELLS					26,909	172	1,340	trace-1500
Atrazine, dealkylated			CA	1989	5	0	0	
			ME	1989-90	120	0	0	
TOTAL DISCRETE WELLS					125	0	0	
Atrazine/Simazine			IL	1985-87	51	0	18	0.12-0.73
TOTAL DISCRETE WELLS					51	0	18	0.12-0.73
Deethyl atrazine			IA	1981-89	686	0	24	0.110-2.860
			IN	1991	3	0	3	0.05-0.370
TOTAL DISCRETE WELLS					689	0	27	0.05-2.860

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000098

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or HA (ug/l) Information	STATE	DATES	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/l)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	% MCL	
Des-isopropyl atrazine	C.R.	--	IN	1988-89	685	0	23	0.100-3.540
			IN	1991	3	0	1	0.10
TOTAL DISCRETE WELLS					689	0	24	0.100-3.540
Azimphos-ethyl	C	--	CA	1984-85	5	0	0	
TOTAL DISCRETE WELLS					5	0	0	
AZIMPHOS-ETHYL	S.R.	--	CA	1984-87	905	0	0	
			IN	1987-88	161	0	0	
			IL	1984-91	76	0	0	
			IL	1986	7	0	0	
			IL	1986-87	71	0	0	
			NY	1982-87	77	0	0	
			OK	1986	1	0	0	
			RI	1986	99	0	0	
			TX	1983-88	199	0	0	
			VX	1987	30	0	5	0.04-2.87
TOTAL DISCRETE WELLS					1,628	0	5	0.04-2.87

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000099

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MA (ppb/1)	STATE	DATE	WELL RESULTS			RANGE OF CONCEN-TRATIONS (ppb/L)
					TOTAL WELLS EXAMINED	WELLS > MCL	WELLS < MCL	
Barban	S, R	-	CA	1987-89	140	0	0	
				1989-90	120	0	0	
TOTAL DISCRETE WELLS					260	0	0	
Bendiocarb	S, R	-	CA	1985	4	0	0	
TOTAL DISCRETE WELLS					4	0	0	
Benefin	S, R	-	CA	1984-86	471	0	0	
				1986	1	0	0	
				1987-88	188	0	0	
TOTAL DISCRETE WELLS					660	0	0	
Benzomyl	S, R, C	-	AR	1986-87	83	0	0	
				1984-89	938	0	1	
				1985-87	22	0	0	
TOTAL DISCRETE WELLS					1,043	0	1	500.0
Bensulfide	S	-	CA	1985	3	0	0	
				1987-88	188	0	0	
TOTAL DISCRETE WELLS					191	0	0	
Bentazon	S	20	CA	1981-89	200	1	63	0.10-20.0
				1987	3	0	0	

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000100

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL (as MA Litterine)	STATE	DATE (YEAR)	WELL RESULTS		RANGE OF CONCEN- TRATIONS (ug/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	
(Simazine)			IL	1987-89	182	1	0
			KS	1984	27	0	0
			LA	1987	3	0	0
			MD	1983	30	0	1
			ME	1986-87	71	0	0
			MI	1985-90	754	1	0.49-2.58
			MO	1987-90	200	0	0.2-0.65
			MS	1987-90	120	0	0
			MT	1987-89	22	0	1
			ND	1985-87	106	0	0
			NE	< 1989	173	0	13
			NJ	1985-88	188	0	6
			NY	1986-87	74	3	0
			OH	1988-89	399	2	101
			OK	1986	1	0	0
			OR	1985-87	161	0	0
			PA	1983-87	81	3	21
			RI	1986	73	0	0
			TX	1983-88	199	0	0
			VA	1986-90	198	3	36
			VT	1986-91	438	1	0

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000101

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or MA Lifetim...	STATE	DATE	WELL RESULTS			RANGE OF CONCEN- TRATIONS 1/9/93
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	> MCL	
(S)Imazin			IL	1988	81	0	0	
			IL	1987	5	4	1	0.27-2.20
TOTAL DISCRETE WELLS					22,374	89	397	0-67.0
Simazine	NR		IL	1984	27	0	0	
			IL	1983	30	0	0	
TOTAL DISCRETE WELLS					57	0	0	
Simetryn	NR		CA	1984-89	168	0	0	
			CA	1987-89	139	0	0	
			CA	1984-85	42	0	0	
			CA	1987-88	161	0	0	
			KS	1984	27	0	0	
			IL	1983	30	0	0	
			IL	1985-88	168	0	0	
TOTAL DISCRETE WELLS					795	0	0	
Sulprofos	IS,R		IL	1987-88	2	0	0	
			IL	1986	6	0	0	
			IA	1985-87	59	0	1	1,300-1,400

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000102

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS HEALTH & ENVIRONMENTAL	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/L)
				TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	> NCL	
(Sulprofos)		IL	1987-88	161	0	0	
TOTAL DISCRETE WELLS				230	0	1	1,300-1,400
Succ		CA	1986-89	58	0	0	
		IL	1989-90	120	0	0	
TOTAL DISCRETE WELLS				178	0	0	
Terbutryn	5	SD	1989	29	0	1	20,700-22,100
		IL	1989-90	120	0	0	
		OK	1986	1	0	0	
		TX	1975	2	0	2	trace-380.0
		WA	1988	81	0	0	
TOTAL DISCRETE WELLS				233	0	3	trace-380
Terbut	5	SD	1985-89	8	0	0	
		IL	1987	3	0	0	
		IL	1989-90	120	0	0	
		DR	1985-87	56	0	1	8.9
		WA	1988	81	0	0	
		IL	1985-87	20	0	5	0.3-1.2
TOTAL DISCRETE WELLS				286	0	6	0.3-8.9

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000103

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or RA (mg/L)	STATE	DATE	WELL RESULTS		RANGE OF CONCENTRATIONS (mg/L)
					TOTAL WELLS SAMPLED	% OF POSITIVE TESTS	
Terbufos	S,R	0.9	GA	1984-91	76	0	0
			VA	1984-89	787	6	1
			IL	1985-86	466	0	0
			IN	1986-90	206	2	0
			MI	1986-90	649	0	0
			ND	1986-90	325	0	1
			ME	1986-90	120	0	0
			HI	1987-88	13	0	0
			ME	< 1989	1435	0	1
			PA	1985-87	24	0	0
			RI	1986	24	0	0
			SD	1986-90	99	0	0
TOTAL DISCRETE WELLS					4,224	0	0
Terbufos Sulfone			IA	1986	13	0	0
TOTAL DISCRETE WELLS					13	0	0
Terbutylazine	S,R	0.001	CA	1986-88	107	0	0
			IN	1987-88	161	0	0
TOTAL DISCRETE WELLS					268	0	0

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000104

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or EA (mg/L)	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (mg/L)
					TOTAL WELLS SAMPLED	N OF POSITIVE WELLS	% MCL	
Terbutryn	C	-	CA	1984-89	242	0	0	-
				1987-88	161	0	0	
				1986	1	0	0	
TOTAL DISCRETE WELLS					404	0	0	
Tetra(chloroethane) (Tetrachloroethane)	C	5	IL	1983	2	0	2	0.007-0.200
				1989-90	126	0	42	0.002-0.196
TOTAL DISCRETE WELLS					128	0	44	0.002-0.200
Tetrachloroethylene	C	-	CA	1984-89	12	0	0	-
				1987-88	161	0	0	
TOTAL DISCRETE WELLS					173	0	0	
Total Dieldrin	C	-	CA	1979-87	147	0	0	-
					147	0	0	
TOTAL DISCRETE WELLS								
Trichloroacarb	S	-	IL	1985-89	270	0	0	-
				1986	65	0	2	
TOTAL DISCRETE WELLS					335	0	2	0.2-0.3

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000105

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or MA (mg/L)	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (mg/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	> MCL < MCL	
Thiocarb-Sulfoxide			CA	1985	157	0	0	
TOTAL DISCRETE WELLS					157	0	0	
Thiophanate	C	\$, SR	CA	1985-87	12	0	0	
TOTAL DISCRETE WELLS					12	0	0	
Thiophanate-Methyl	\$, SR		CA	1988	3	0	0	
TOTAL DISCRETE WELLS					3	0	0	
Toxaphene	ND, SR		AL	1987	14	0	0	
			CA	1976-89	2124	2	0	4,900-18,000
			CT	1987-89	122	0	0	
			GA	1984-91	179	0	4	1,900
			IL	1980-86	12	0	0	
			IA	1983-86	59	0	0	
			IL	1985-86	468	0	0	
			IN	1986-88	169	0	0	
			KS	1984-86	107	0	0	
			MD	1986-90	269	0	0	
			MS	1982-90	263	1	1	1.5-4.91
			MT	1984-86	22	0	0	

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000106

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	NO. OF EA (1974)	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	> MCL	
YEAR								
(Toxaphene)			AL	1985-86	185	0	0	
			AL	1985-87	139	0	0	
			CA	1985-87	44	0	0	
			PR	1983-84	63	0	0	
			IN	1986-87	24	0	0	
			VA	1986-90	12	0	1	1.75
TOTAL DISCRETE WELLS					4,273	3	6	1.5-18,000
Tralomethrin	S.R.	---	TX	1987-88	188	0	0	
TOTAL DISCRETE WELLS					188	0	0	
Trichlorfon	S.R.	---	CA	1984-89	14	0	0	
TOTAL DISCRETE WELLS					14	0	0	
Triazine Screen			CA	1986	1	0	0	
			OH	1990	863	0	48	0.100-5,000
TOTAL DISCRETE WELLS					864	0	48	0.100-5,000
Triazine	S.R.	---	CA	1984-87	381	0	0	
			TX	1987-88	168	0	0	
TOTAL DISCRETE WELLS					569	0	0	

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000107

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL or MCL-EQUIV.	STATE	DATE	ELU RESULTS			RANGE OF CONCEN. EQUIV. (ug/L)	
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS			
						< MCL	≥ MCL		
Trichloroacetic acid	U		CA	1988	97	0	0		
TOTAL DISCRETE WELLS					97	0	0		
Trichloroethene (Trichloroethylene)	C	5	CT	1987-88	75	2	5		
			IL	1983-87	244	4	9	0.410-26,000	
			IA	1984	1	0	0		
			IL	1988	97	0	0		
			VA	1989-90	126	0	2	0.016-0.017	
TOTAL DISCRETE WELLS					543	6	14	0.016-26,000	
Trichlorfon	S		CA	1984-87	280	0	0		
			CA	1984-91	179	0	12	10,000	
TOTAL DISCRETE WELLS					459	0	12	10,000	
Trichloroenet	C		CA	1984-89	4	0	0		
			IL	1986	7	0	0		
			IL	1987-88	161	0	0		
TOTAL DISCRETE WELLS					172	0	0		

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000108

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR MA (1977)	STATE	DATE	WELL RESULTS			RANGE OF CONCEN. TRATIONS (1977)	
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	< MCL		
Trichloroethylene-phenol	TSCA	TSCA	CA	1984-86	162	0	0		
				1984-85	16	0	0		
TOTAL DISCRETE WELLS					178	0	0		
Trichloroethylene	S	S	ME	1986-87	62	0	0	0.006-0.018	
				1987-88	187	0	1		
				1989-90	126	0	4		
				1984-87	4	0	0		
TOTAL DISCRETE WELLS					379	0	5	0.006-0.58	
Trichloroethylene		TSCA	CA	1989	6	0	0		
TOTAL DISCRETE WELLS					6	0	0		
Trichloroethylene	TSCA	S	CA	1981-89	128	0	0	0.040-14,890	
				1987-89	137	0	0		
				1988	3	0	0		
				1984-91	76	0	0		
				1981-89	863	1	3		
				1983-87	542	0	26		
				1987-90	218	0	3		
				1984-87	88	0	0		
			ND	1983	30	0	1	0.1	

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000109

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	MCL OR EA (µg/L)	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (µg/L)
					TOTAL WELLS SAMPLED	# OF POSITIVE WELLS	% MCL	
				YEAR				
(Trifluralin)			ME	1986-87	71	0	0	
			MI	1985-90	754	0	0	
			MD	1987-90	324	0	10	0.006-0.143
			MS	1982-90	263	0	1	.0016
			NC	1985	1	0	1	<0.031
			NE	< 1989	1440	0	1	0.042
			NJ	1986-88	89	0	0	
			NY	1986-87	79	0	0	
			OK	1986	8	0	0	
			SD	1984-90	99	0	2	0.02-0.03
			TX	1986-88	219	0	0	
			VA	1986-90	136	0	9	0.01-0.23
TOTAL DISCRETE WELLS					5,590	1	57	0.0018-14.890
Ureall (t/Urea)	U		FL	1988	3	0	0	
TOTAL DISCRETE WELLS					3	0	0	
Vermolate	S		CA	1984-89	7	0	0	
			CA	1984-91	76	0	0	
TOTAL DISCRETE WELLS					83	0	0	

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000110

NATIONAL WELL SAMPLING DATA BY PESTICIDE

PESTICIDE	REGULATORY STATUS	NCL OR RA (1974)	STATE	DATE	WELL RESULTS			RANGE OF CONCENTRATIONS (ug/L)
					TOTAL WELLS SAMPLED	% OF POSITIVE WELLS	< NCL	
Alpha-BHC	U	15,000	CA	1984-89	3062	0	0	
			HI	1989-90	98	0	0	
TOTAL DISCRETE WELLS					3,160	0	0	
Zinc	C	100	CA	1985	9	0	0	
TOTAL DISCRETE WELLS					9	0	0	
Zinc	U	100	CA	1984-89	319	0	0	
TOTAL DISCRETE WELLS					319	0	0	
GRAND TOTAL DISCRETE WELLS ALL					68824	9947	6663	

Regulatory Status:

C - Cancelled
 NR - Not Registered
 R - Restricted Use
 S - Supported
 SR^C - Special Review Completed
 SR^P - Special Review In Progress
 SR^{Pr} - Presently In Pre-Special Review
 U - Unsupported

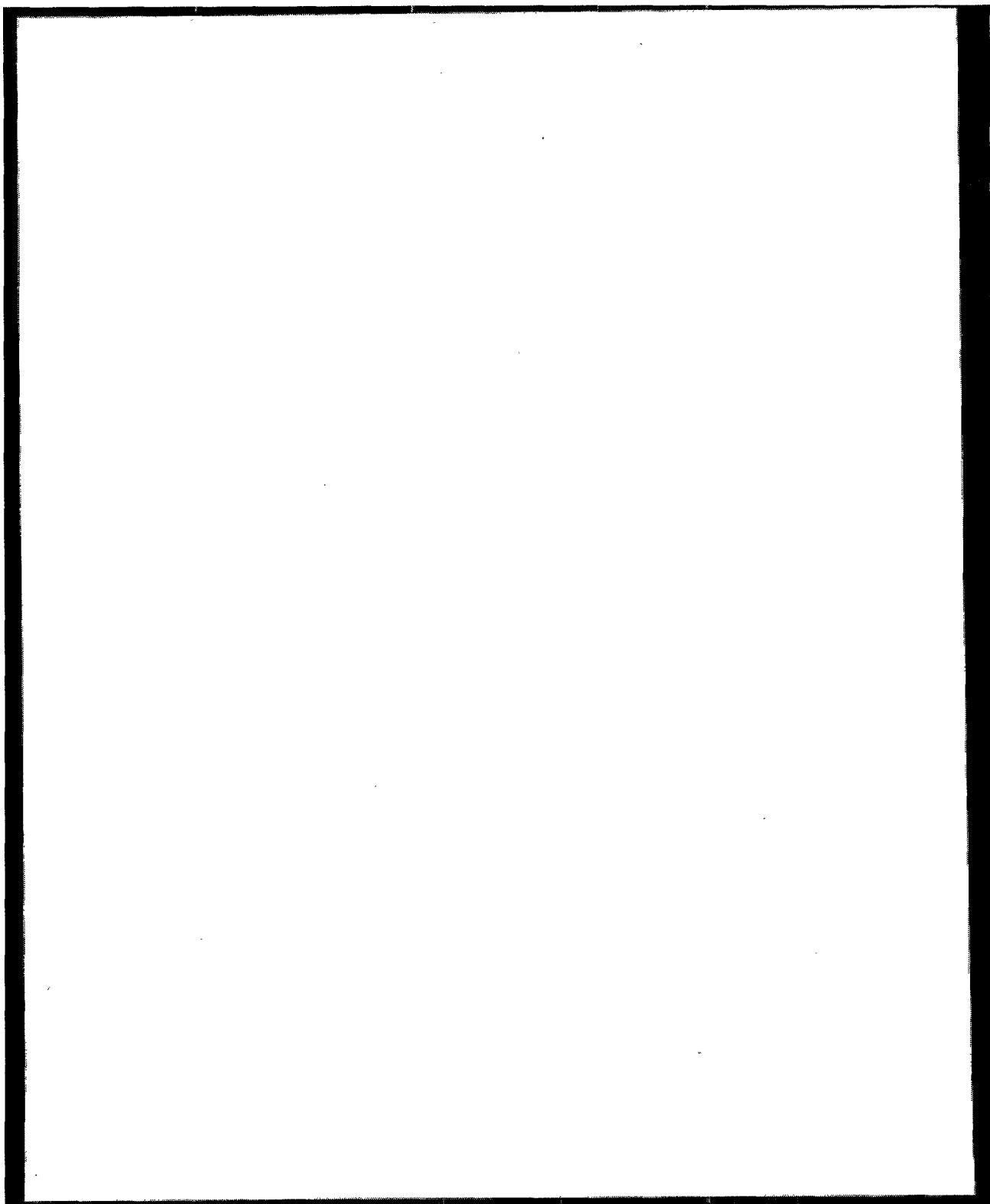
nd - not detected

** Positives for alpha-BHC only, beta-BHC was not found.

Note: Some of the dates in the Florida database (i.e. 1989) are obvious errors. These dates are listed in this document as they were provided, the true dates could not be determined.

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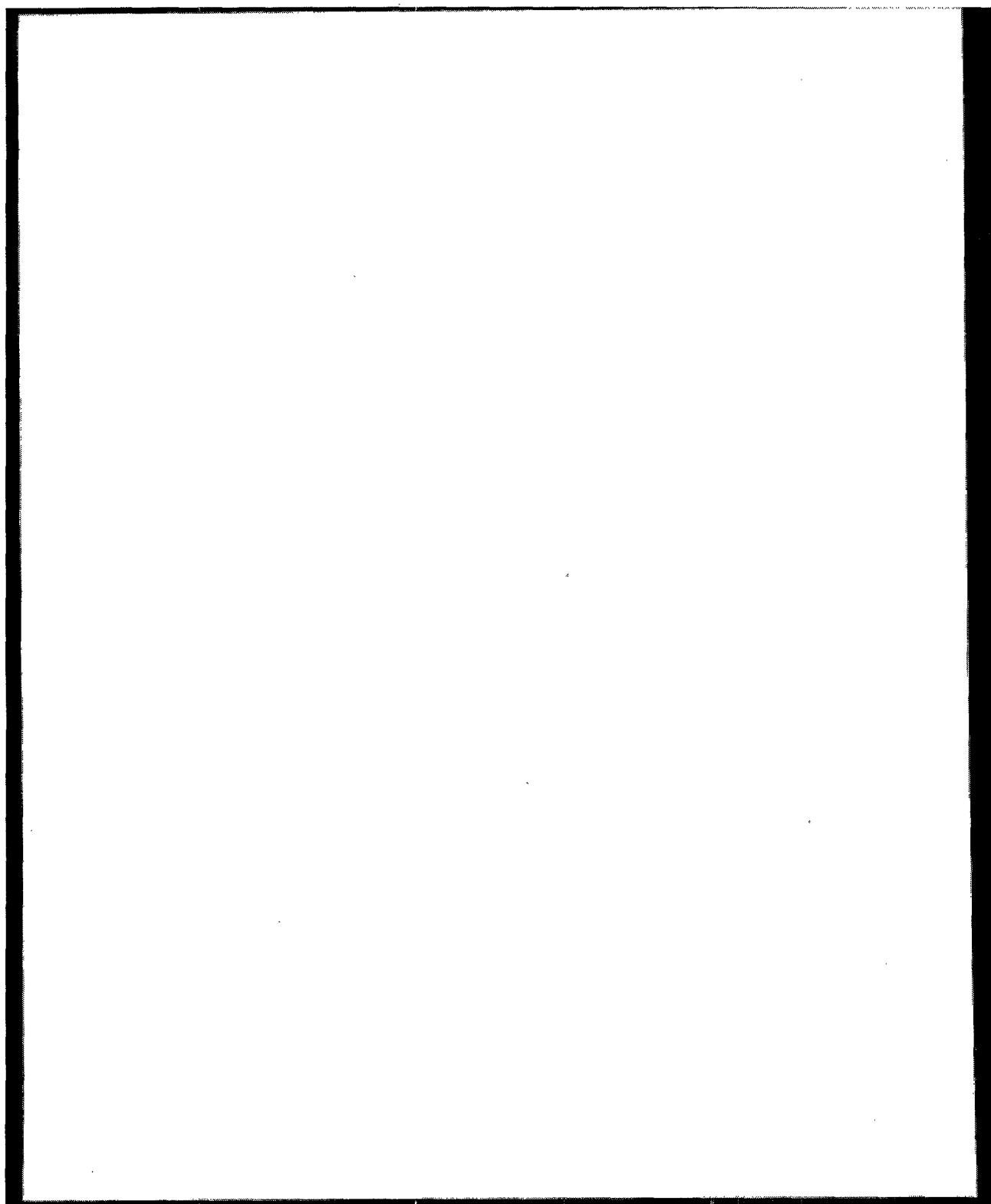


000112

Pesticides in Ground Water Database - 1992 Report

TABLE2: WELL DATA BY STATE

000113



000114

NATIONAL WELL SAMPLING DATA BY STATE

STATE	TYPES OF WELLS									SOURCE OF CONTAMINATION (NUMBER OF WELLS)		
	DRINKING WATER			MONITORING			OTHER					
	TOTAL SAMPLED	< 100 PPM	> 100 PPM	TOTAL SAMPLED	< 100 PPM	> 100 PPM	TOTAL SAMPLED	< 100 PPM	> 100 PPM	INFO	RSP	GRK
Alabama	10	0	4	81	0	1	3	0	1	6	0	0
Alaska	0	0	0	0	0	0	0	0	0	0	0	0
Arkansas	53	0	0	0	0	0	66	1	0	0	1	0
Arizona	40	0	1	0	0	0	0	0	0	1	0	0
California	10034	1096	859	18	4	3	273	36	49	0	0	2047
Connecticut	2474	476	321	187	5	52	0	0	0	853	1	0
Colorado	0	0	0	0	0	0	4	0	4	4	0	0
Delaware	0	0	0	36	24	8	0	0	0	32	0	0
Florida	17882	1630	621	28	0	1	243	78	32	2362	0	0
Georgia	114	10	46	3	2	0	92	11	26	93	0	0
Hawaii	574	27	98	0	0	0	0	0	0	125	0	0
Idaho	15	0	0	0	0	0	0	0	0	0	0	0
Illinois	522	2	48	18	0	18	14	0	5	58	15	0
Indiana	493	15	19	38	0	5	2	2	0	40	1	0
Iowa	827	23	159	75	0	26	24	0	8	216	0	0
Kansas	211	7	26	0	0	0	3	0	3	0	0	36
Kentucky	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	9	0	2	0	0	0	3	0	0	0	0	2
Maine	466	28	155	24	0	9	0	0	0	192	0	0
Maryland	71	8	16	15	6	9	9	2	0	41	0	0
Massachusetts	516	127	93	54	10	16	1	1	0	247	0	0
Michigan	35	11	1	0	0	0	4	0	0	12	0	0
Minnesota	667	16	219	82	5	32	5	0	3	51	2	222
Mississippi	263	1	159	0	0	0	0	0	0	200	0	0
Missouri	300	17	95	0	0	0	25	1	4	117	0	0
Montana	103	1	22	5	0	1	16	0	1	19	6	0
Nebraska	1846	8	168	70	4	36	364	12	115	112	2	229
Nevada	0	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	13	0	0	0	0	0	12	0	0	0	0	0
New Jersey	176	4	19	0	0	0	67	7	25	55	0	0

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000115

NATIONAL WELL SAMPLING DATA BY STATE

STATE	TYPES OF WELLS									SOURCE OF CONTAMINATION (NUMBER OF WELLS)		
	DRINKING WATER			MONITORING			OTHER					
	TOTAL SHLD	< MCL	> MCL	TOTAL SHLD	< MCL	> MCL	TOTAL SHLD	< MCL	> MCL	NFU	PS	UNK
New Mexico	0	0	0	0	0	0	0	0	0	0	0	0
New York	21168	5756	1672	48	7	3	3	0	1	7408	31	0
North Carolina	443	2	93	0	0	0	3	0	0	95	0	0
North Dakota	602	0	26	113	0	4	0	0	0	19	10	1
Ohio	1662	10	348	0	0	0	0	0	0	358	0	0
Oklahoma	50	0	0	0	0	0	15	0	0	0	0	0
Oregon	161	13	101	4	0	0	0	0	0	114	0	0
Pennsylvania	56	6	23	35	1	31	0	0	0	51	4	5
Rhode Island	1816	51	99	10	7	0	0	0	0	157	0	0
South Carolina	188	11	123	6	0	0	0	0	0	75	0	61
South Dakota	0	0	0	99	1	63	0	0	0	64	0	0
Tennessee	11	0	2	0	0	0	17	0	1	0	0	3
Texas	252	45	28	7	0	2	252	28	31	25	77	32
Utah	0	0	0	0	0	0	0	0	0	0	0	0
Vermont	424	8	12	12	0	0	10	0	0	18	2	0
Virginia	203	9	132	5	6	2	0	0	0	147	2	0
Washington	168	25	29	7	1	2	7	0	2	56	2	1
West Virginia	14	0	3	0	0	0	6	1	1	0	5	0
Wisconsin	1255	66	87	360	139	50	16	0	0	282	44	16
Wyoming	78	0	26	27	0	16	0	0	0	26	0	16
TOTAL	65,865	9,509	5,993	1,400	222	390	1,559	180	312	13,731	205	2,672

NFU = Known or Suspected Normal Field Use

PS = Known or Suspected Point Source

UNK = Unknown

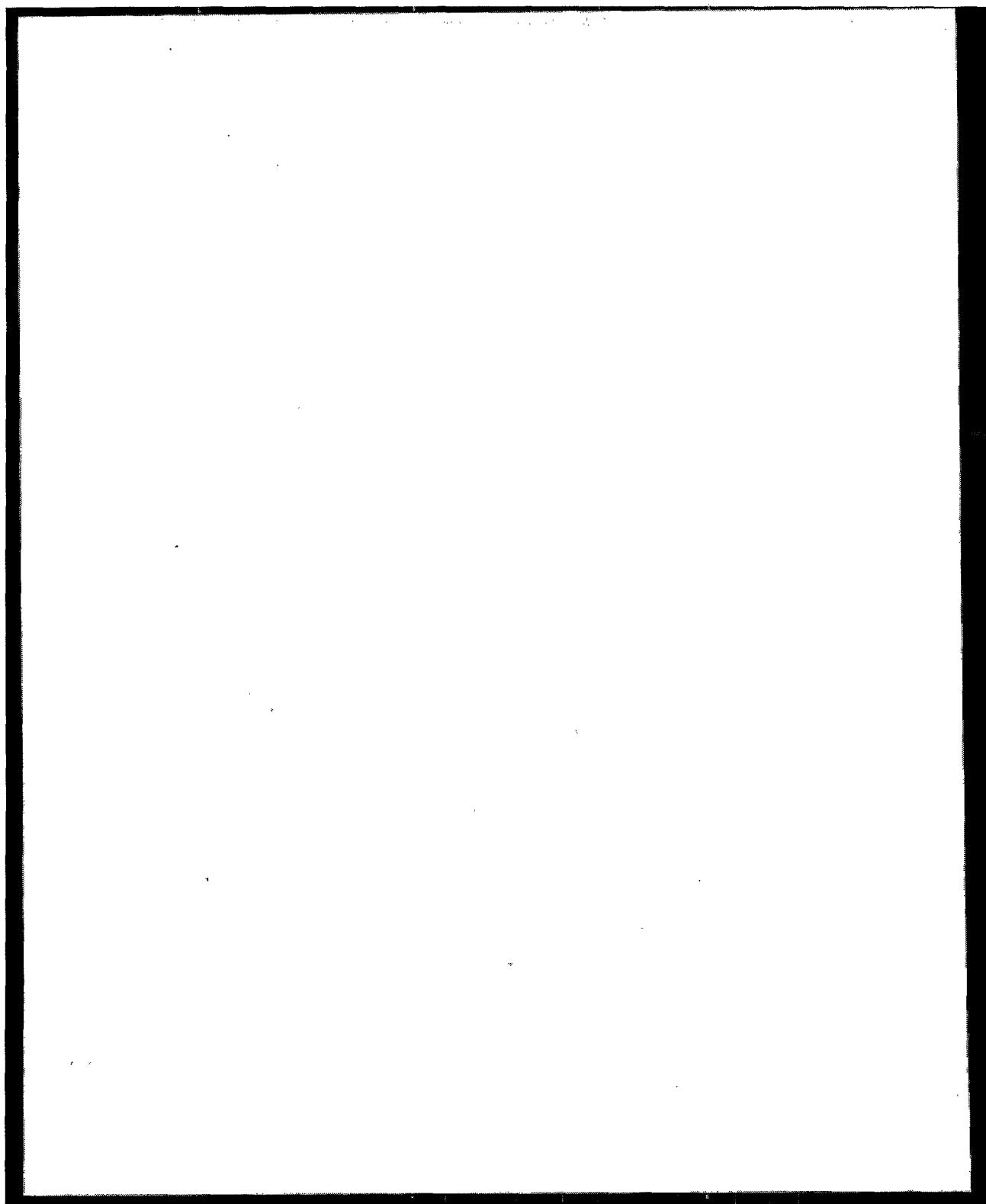
NS-176

000116

Pesticides in Ground Water Database - 1992 Report

APPENDIX I - PESTICIDE CROSS-REFERENCE TABLE

000117



000118

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ppm/L)	LRA (ug/l)	PESTICIDE CATEGORY	REGULATORY STATUS
α -Naphthol				Insecticide	C
1,2,4-Trichlorobenzene		9	9	Herbicide	U,C
1,2-D	1,2-Dichloropropane				
1,2-Dichloroethane		5		Fumigant	S
1,2-Dichloropropane		5		Fumigant	C
1,3-D	Dichloropropene				
1,3-Dichloropropene	1,1,1-trichloropropane				
2-Chlorallyl-diethylthiocarbamate	CDEC				
2(2,4-Dichlorophenoxy) propionic acid	Dichlorprop				
2(2,4-DB)diethylamine salt	Dichlorprop				
2,4-D		70		Herbicide	S, SR ^{Pre}
2,4-DE				Herbicide	S, SR ^{Pre}
2,4-Dichlorobenzoic acid				Possible degrade or impurity	
2,4-Dichlorophenoxyacetic acid	2,4-D				
2,4-Dinitrophenol				Acaricide insecticide	U,C
2,4-OP	Dichlorprop				
2,4-S-T		70		Herbicide	C, SR ^C
2,4,5-Trichlorophenoxyacetic acid	2,4,5-T				
2,4,5-TP		50		Herbicide	C, SR ^C
2,4,6-Trichlorophenol	Trichlorophenol				
2-hydroxybenzene	Alachlor			Degradate	
2-hydroxycarboxuran	Carbofuran			Degradate	
3-ketocarboxuran & 3-ketofuran (phenol)	Carbofuran			Degradate	
5,6-Dichlorobenzoic acid	Propanide			Degradate	
4-Nitrophenol	Parathion, methyl		60	Degradate Fungicide	S
4(2,4-Dichlorophenoxy) butyric acid	2,4-DB				
4(2,4-DB), Butoxyethanol ester	2,4-OB				

APPENDIX I-1

000119

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ppm)	LML (ug/l)	PESTICIDE CATEGORY	REGULATORY STATUS
4(2,4-DB), Dimethylamine salt	Z-A-94				
5-Hydroxy dicamba	Dicamba			Degradate	
Aacenaphthene				Insecticide Fungicide	S
Acephate				Insecticide	S
Acifluorfen				Herbicide	S
Acrolein				Fungicide Herbicide Antimicrobial	S,R
Acrylonitrile				Fungicid	C,R,SR ^D
Alethaler		2		Herbicide	S,R,SR ^P
Aldicarb		3	1	Insecticide Acaricide Fungicide Nematicide	S,R,SR ^P
Aldicarb Sulfone	Aldicarb	2	1	Degradate	
Aldicarb Sulfoxide	Aldicarb	4	1	Degradate	
Aldicarb, Total	Aldicarb	3		Parent + degradates	SR ^P
Aldrin				Insecticide	C,SR ^C
Anotryn		60	60	Herbicide	S
Amiocarb				Insecticide	U,C
Amitraz				Insecticide Acaricide	S,R,SR ^C
Amitrole				Herbicide	S,R ^P
Anilazine				Fungicide	S
Arsenite		50			
Arsenates, Arsenites	Arsenite			Insecticide Fungicide Herbicide	C, SR ^C
Arsenic acid Arsenicals	Arsenite			Defoliant Insecticide	S,P SR
Atraton	experimental discontinued triazine			Herbicide	C
Atrazine		3		Herbicide	S,R
Atrazine, dealkylated	Atrazine			Degradate	
Azinphos-ethyl				Insecticide	C
Azinphos-methyl				Insecticide	S,R
Banvel	Dicamba				

APPENDIX I-2

000120

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	NCL OK/1)	EPA (A9/1)	PESTICIDE CATEGORY	REGULATORY STATUS
Banban				Herbicide	C
Baygon	Procedure				
Bendiocarb				Insecticide	S,R
Benzolin	Benfluralin			Insecticide Herbicide	S
Benfluralin	Bebatin				
Benzoyl				Fungicide	S,SR ^C
Bermudide				Herbicide	S
Bentazon		20	20	Herbicide	S
Bentazon, sodium salt	Bentazon			Degradate	
BHC (α,β,δ)				Insecticide	C,SR ^C
BHC (f')	Utridane				
Bromecil			90	Herbicide	S
Bromidea	Sodium bromide				
Bromoxynil				Herbicide	S
Bufencarb				Insecticide	C
Butachlor				Herbicide	C
Cacylate			350	Herbicide	S
Captafol				Fungicide	C
Captan				Fungicide	S,SR ^C
Carbarsil			700	Insecticide	S
Carbendazim				Fungicide	C
Carbofuran		40	40	Insecticide Acaricide Fungicide Nematicide	S,R,SR ^C
Carbofuran phenol	Carbofuran			Degradate	
Carbofuran, total	Carbofuran			Parent + degradates	SR ^C
Carbon disulfide				Fumigant Fungicide	U
Carbon tetrachloride		5		Fire retardant in fumigant formulations	SR ^C
Carbophenothiazine				Insecticide Acaricide	C
Carbophenothiazine, methyl				Insecticide Acaricide	U

APPENDIX I-3

000121

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	RCL (1971)	LRA (1971)	PESTICIDE CATEGORY	REGULATORY STATUS
Carboxin			700	Fungicide	S
EDBC				Herbicide	C
Chloranben			100	Herbicide	U,C
Chlordane		2		Insecticide Termiticide	C,SR ^a
Chlordcone				Insecticide	C,SR ^c
Chlordimeform				Insecticide Acaricide Ovicide	C,SR ^c
Chlorfenvin				Herbicide	U,C
Chlorfenson				Acaricide	U,C
Chlorallyl alcohol				Insecticide	C
Chlorobenzilate				Insecticide Acaricide	C,SR ^a
p-Chloro-p-cresol				Fungicide Antimicrobial	S
p-Chloro-p-cresol					
Chloroform		100		Fumigant	C,SR ^b
Chloronib				Fungicide	S
Chloropeterin				Fumigant Warning agent	S,R
Chlorothalant				Fungicide	S
Chlorexuron					C
Chlorophopham				Herbicide	S
Chlorpyrifos		20		Insecticide	S
Chlorpyrifos, methyl				Insecticide	S
Chlorsulfuron				Herbicide	S
Chlothal dimethyl	DCPA				
Copper					
Copper salts	Copper			Insecticide Herbicide Antimicrobial Fungicide	some S some U
Copper oxides	Copper			Insecticide Herbicide Fungicide	S
Columaphos				Insecticide	S
Erufonate				Insecticide	
Cyanazine			1	Herbicide	S,R,SR ^c

APPENDIX I-4

000122

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	ICL CAS#	LHA CAS#	PESTICIDE CATEGORY	REGULATORY STATUS
Cyanide		200	200		
Cyanide, calcium or potassium	Cyanide			Rodenticide	U
Cyanide, sodium	Cyanide			Rodenticide	S,R
Cycloate				Herbicide	S
Cyclohexatin				Insecticide	S,R
Cymazine				Herbicide	C
Dacthal	DCPA				
Dacthal diacid	DCPA acid metabolites				
Dalapon		200	200	Herbicide	U,C
DBCP		6.2		Fumigant	C,R,SR ^C
DCBA	2,4-Bis(chloromethyl) acid				
DCP	1,2-Dichloropropane				
DDPA		4000		Herbicide	S
DCPA acid metabolites	DCPA			Degradate	
D-D Mix	1,2-Dichloropropane and Dichloropropene				
DDT	DDT			Insecticide	C
DDD	DDT			Degradate	S,C
DDE	DDT			Degradate	
DDVP	Dichlorvos				
DEF	Tributyl			Insecticide Acaricide	C,R
Demeton				Insecticide Acaricide	C
Demeton-methyl				Insecticide Acaricide	C
Demeton-S				Degradate	
Demeton-S sulfone	Demeton-S			Degradate	
Desethyl atrazine	Atrazine			Degradate	
Des-isopropyl atrazine	Atrazine			Herbicide	C,R
Diallate				Herbicide	C,R,SR ^C
Diazinon			0.6	Insecticide Fungicide Nematicide	S,SR ^C
Dibromo-chloropropane	DBCP				

APPENDIX I-5

000123

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	ICL (ppm)	LHM (ppm)	PESTICIDE CATEGORY	REGULATORY STATUS
Bisbutyl phthalate				Insect repellent	S,C
Dicamba			200	Herbicide	S
Dichlobenil				Herbicide	S
<i>o</i> -Dichlorobenzene		600	600	Antimicrobial	S
<i>p</i> -Dichlorobenzene		75	75	Insecticide Fungicide Rodenticide Antimicrobial	S
Dichloropropene ^A					
Dichloropropene				Nematicide Fumigant	S,R,SR ^P
Dichlorprop				Herbicide	S,SR ^{PC}
Dichlorprop, butoxyethanol ester	Dichlorprop				
Dichlorvos				Insecticide	S,SR ^P
Dicofol				Insecticide Acaricide	S,SR ^C
Dicrotophos				Insecticide	S,R
Dieldrin				Insecticide	C,SR ^C
Diethylhexyl phthalate	Diethyl phthalate				
Dinathocate				Insecticide Acaricide	S,SR ^C
Dinoseb		7	7	Herbicide	C,SR ^C
Dinitrocresol	DNOC				
Diisotyl phthalate				Acaricide	C
Dioxamcarb					C
Dioxathion				Insecticide	C,R
Diphenomid		200		Herbicide	C
Diquat		20	20	Herbicide	S
Diquat dibromide and various salts	Diquat				
Disulfoton			0.3	Insecticide Acaricide	S,R
Disulfoton sulfone	Disulfoton			Degradate	
Disulfoton sulfosulfone	Disulfoton			Degradate	
Dituron			10	Herbicide	S
Diquat				Fly larvicide	C

APPENDIX I-6

000124

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ug/l)	LHA (ug/l)	PESTICIDE CATEGORY	REGULATORY STATUS
DHOC				Insecticide Herbicide Fungicide Antimicrobial	U,C
DHOC, sodium salt	DHOC				
EDB	Ethylene dibromide				
EBDC compounds	Maneb, Mancozeb, Zineb				SR ^C
Endosulfan				Fungicide Antimicrobial	S
Endosulfan I	Endosulfan			Isomer	
Endosulfan II	Endosulfan			Isomer	
Endosulfan sulfate	Endosulfan			Degradate	
Endosulfetol		100	100	Herbicide	S
Endrin		2	2	Insecticide	U,C,R,SR ^C
Endrin aldehyde	Endrin			Degradate	
EPN				Insecticide Acaricide	C,R
EPTC				Herbicide	S
Ethalfluroril				Herbicide	S,SR ^C
Ethion				Insecticide Acaricide	S,R
Ethoprop				Insecticide Fungicide Nematicide	S,R
Ethyl alcohol				Disinfectant	S
Ethylen				Insecticide	U,C,SR ^C
Ethylene bisdithiocarbamate compounds	Maneb, Mancozeb, Zineb				
Ethylene dibromide		0.05		Insecticide	C,R,SR ^C
Ethylene dichloride	1,2-Dichloroethane				
Ethylene thiourea	ETU				
Ethyl parathion	Parathion, ethyl				
Etridiazole				Fungicide	S
ETU	Maneb			Degradate	
Fenac	Chlorfenz				
Fenamiphos			2	Insecticide Fungicide Nematicide	S,R

APPENDIX I-7

000125

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	HCH (α,β,γ)	LHA (ppm/l)	PESTICIDE CATEGORY	REGULATORY STATUS
Fenamiphos sulfone	Fenamiphos			Degradate	
Fenamiphos sulfoxide	Fenamiphos			Degradate	
Fenarimol				Fungicide	S
Fenbutatin-oxide				Insecticide Acaricide	S
Fenulothion				Insecticide Fungicide Nematicide	C,R
Fenthion				Insecticide	C
Fenuron				Herbicide	C
Fenvatinate				Insecticide	S,R
Fluazifop-butyl				Herbicide	S
Fluchloralin				Herbicide	S
Flumetralin				Herbicide	S
Fluometuron		90		Herbicide	S
Fluridone				Aquatic herbicide	S
Fenofox		10		Insecticide	S,R
Formaldehyde		1000		Fungicide Antimicrobial	U
Glyphosate	Glyphosate	700	700	Herbicide	S
Glyphosate isopropylamine salt					
Guthion	Aciphophen-methyl				
HCH (α,β,γ)	HCH-(α,β,γ)				
HCH (γ)	Indane				
Heptachlor		0.4		Insecticide	C _{45R} ^C
Heptachlor epoxide	Heptachlor	0.2		Degradate	
Hexachlorobenzene		1		Seed protectant	
Hexazinone			200	Herbicide	S
Hydroxylachlor	Alechlor			Degradate	
Iprodione				Fungicide	S
Isobutenyl thiocyanobenzoate				Insecticide	C
Itoferphos				Insecticide Herbicide	S,R
Isoproturon				Herbicide	C

APPENDIX I-8

000126

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ug/l)	LHA (ug/l)	PESTICIDE CATEGORY	REGULATORY STATUS
Kepone	Carbofoscon				
Lindane		0.2	0.2	Insecticide	S, R, SR ^C
Linuron				Herbicide	S, SR ^B
Malathion			200	Insecticide	S
Malathion	Malathion			Degradate	
Mancozeb				Fungicide	S
Mario				Fungicide	S
MCPA			10	Herbicide	some C, some S
MCPA acids, salts, esters	MCPA				
MCPB				Insecticide	S
MCPB salts, esters	MCPA				
MCPP salts, esters	Mecoprop				
MCPPA	Mecoprop				
Mecoprop				Herbicide	S
Mercury		2	2		SR ^C
Mephius				Fungicide Herbicide	U, C
Metalaxyl				Fungicide	S
Methachliphos				Insecticide Acaricide	S, R
Methasulf				Herbicide	S
Methidathion				Insecticide Acaricide	S, R
Methiocarb				Insecticide Acaricide Molluscicide Rodenticide Bird repellent	S, R
Methomyl		200		Insecticide	S, R
Methoxychlor		40	40	Insecticide Acaricide	S
Methyl bromide				Insecticide Antimicrobial	S, R
Methyl carbophenothion	Carbophenothion methyl				
Methyl isothiocyanate				Insecticide Fungicide Herbicide	S, R
Methyl parathion	Parathion, methyl			Degradate	

APPENDIX I-9

000127

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	INC./ CER/11	CER/10	PESTICIDE CATEGORY	REGULATORY STATUS
Methyl parathion	Parathion-methyl				
Methyl trithion	Carbofenthion-methyl				
Methylene chloride				Insecticide	U
Metsachlor		100		Herbicide	S
Metrifuzin			200	Insecticide	S
Metrifuzin DA	Metrifuzin			Degradate	
Metrifuzin DAK	Metrifuzin			Degradate	
Metrifuzin SK	Metrifuzin			Degradate	
Mevinphos				Insecticide Acaricide	S,R
Hexacarbamate				Insecticide	U,C
Nipex				Insecticide	C,SR ^C
Molinate				Herbicide	S
Molinate sulfoxide	Molinate			Degradate	
Monocrotophos				Insecticide Acaricide	C,R
Monuron				Herbicide	C,SR ^C
Mated				Insecticide Acaricide	S
Machthaiene		20		Insecticide	S
Napropamide				Insecticide	S
Haptalam				Herbicide	S
Neburon				Herbicide	C
Nemagon	DECP				
Nitrofen				Herbicide	C
p-Nitrophenol	p-Nitrophenol				
Monsachlor	Chlordane			Impurity in formulation	
Merturazon				Herbicide	S
Octyl bicycloheptene dicarboximide				Insecticide Fungicide Antimicrobial	S
Ortho-dichlorobenzene	o-Dichlorobenzene				
Oryzalin				Herbicide	S
Ovex	Chlortenson				

APPENDIX I-10

000128

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ug/L)	LRA (ug/L)	PESTICIDE CATEGORY	REGULATORY STATUS
Chavicol		200		Insecticide Acaricide Fungicide Nematicide	S,R
Chrysancone	Chlordane			Animal metabolite	
Cydonetan-methyl				Insecticide Acaricide	S,R,SR ^D
Cyprotoxofor				Insecticide Acaricide	C
Cyclotoluron				Herbicide	S,SR ^C
Para-chloromataresol	p-Chloro-m-cresol				
para-Dichlorobenzene see p-Dichlorobenzene, listed at dichlorobenzene	p-Dichloro-m-cresol				
Paraquat		30		Herbicide	S,R
Paraquat dихloride	Paraquat				
Parathion	Parathion, ethyl				
Parathion, ethyl				Insecticide	S,R,SR ^C
Parathion, methyl		2		Insecticide	S,R
PCNB				Fungicide	S,SR ^C
PCP	Pentachlorophenol				
Pebulate				Insecticide Herbicide	S
Pendleton				Herbicide	S
Pentachlorophenol		1		Insecticide Fungicide Antimicrobial	S,R,SR ^B
Permethrin				Insecticide	S,R
Perthane	Styrene				
Phorate				Insecticide	S,R
Phorate sulfone	Phorate			Degradate	
Phorate sulfotetra	Phorate			Degradate	
Phoratoxon	Phorate			Degradate	
Phoratoxon sulfone	Phorate			Degradate	
Phoratoxon sulfotetra	Phorate			Degradate	
Phosalone				Insecticide Acaricide	U,R
Phosmet				Insecticide	S

APPENDIX I-11

000129

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL Code/ID	LRR Code/ID	PESTICIDE CATEGORY	REGULATORY STATUS
Phosmet oxygen arimid	Phosmet			Degradate	
Phosphamidon				Insecticide	C, R
Picloram		500	500	Herbicide	S, R
Pirimicarb				Aphidiocide	C
Pirimicarb sulfone	Pirimicarb			Degradate	
Profenofos				Insecticide	S, R
Profluralin				Herbicide	C
Proseccarb				Insecticide	NR (in US)
Proseton		100		Herbicide Antimicrobial	S
Prostethyn				Herbicide	S
Promamide		50		Herbicide	S, R, SR ^C
Propachlor		90		Herbicide	S
Propanil				Herbicide	S
Propaniltite				Insecticide Acaricide	
Propazine		10		Herbicide	C
Propanoate		100		Herbicide	C
Propoxur		3		Insecticide	S, SR ^F
Propyzamide	Propanamide				
Prothifos	Prothifophos				
Prothifophos				Insecticide	NR
Pyrethrins				Insecticide Fungicide Antimicrobial	U
Pyridor				Herbicide	C
Kornel				Insecticide	U, C, SR ^E
Ratenone	Rotenone			Degradate	
Ratenone				Insecticide Acaricide Piscicide	S
Sebuveton				Herbicide	C
Sethoxydim				Herbicide	S
Siduron				Herbicide	S
Silvex	2,4-S-TP		1	4	Herbicide
Simazine					S

APPENDIX I-12

000130

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ug/l)	LC50 (ug/l)	PESTICIDE CATEGORY	REGULATORY STATUS
Sodium cyanide				Herbicide	HR
Simeonin				Herbicide	HR
Sodium bromide	Bromide			Insecticide Fungicide Herbicide Antimicrobials	S
Sodium cyanide	Cyanide			Insecticide	S,R
Sulphur				Herbicide	C
TCA and salts	Trichloroacetic acid				
TCE	Trichloroethene				
Tebuthiuron		500		Herbicide	S
Tetane	Butylacrylene				
Tetraethyl		90		Herbicide	S
Tetcyclor			0.9	Insecticide Fungicide Nematicide	S,R
Tetrahydro sulfone	Terbufos			Degradate	
Tetrahydroazine				Herbicide	S
Tetrahydrofuran				Herbicide	C
Terrazole	2-chloroazole				
Tetrachloroethylene		5		Fumigant	C
Tetrahydrofuran				Insecticide	S
Tetradecan					U,C
Thanite	Isobutyl Chlorcyanate				
Thifoben carb				Herbicide	S
Thifoben carb sulfoxide				Degradate	
Thiophanate				Fungicide	C
Thiophanate-methyl				Insecticide Fungicide	S,S,R,C
Tordon	dicloran				
Toxaphene		3		Insecticide	U,R,SR,C
Toxaphene				Insecticide	S,R
trans-chlordane	chlordane			Impurity in formulation	
Tetradecan				Fungicide	S

APPENDIX I-13

000131

PESTICIDE CROSS-REFERENCE TABLE

CHEMICAL NAME	REFERENCE	MCL (ppm)	LOA (ppm)	PESTICIDE CATEGORY	REGULATORY STATUS
Tribufos				Herbicide	S
Trichlorfon				Insecticide	S
Trichloroacetic acid				Herbicide	U
Trichlorobenzene	Trichlorobenzene				
Trichloroethylene	Trichloroethylene	5		Fungicide	C
Trichloronate				Insecticide	C
Trichlorophenol				Fungicide Herbicide Antimicrobial	U,C
Trichlorophoron	Trichlorophoron				
Triclopyr				Insecticide Herbicide	S
Tricyclazole				Fungicide	NR
Trifluralin		5		Herbicide	S,SS,C
Trithion	Carbophenothion				
Tunic	Methimazole				
Ureall/Uren				Antimicrobial	U
Vernolate				Herbicide	S
Vorlex	1,2-dichloropropane Dichloropropane Methyl isothiocyanate				
Xylene		10000	15000	Insecticide Fungicide Herbicide Antimicrobial	U
Zineb				Insecticide Fungicide	C
Ziram				Insecticide Fungicide	U

SR^P Presently in Pre-Special ReviewSR^I Special Review in progressSR^C Special Review completed

S Supported: The producer(s) of the pesticide has made commitments to conduct the studies and pay the fees required for reregistration, and is meeting those commitments in a timely manner.

APPENDIX I-14

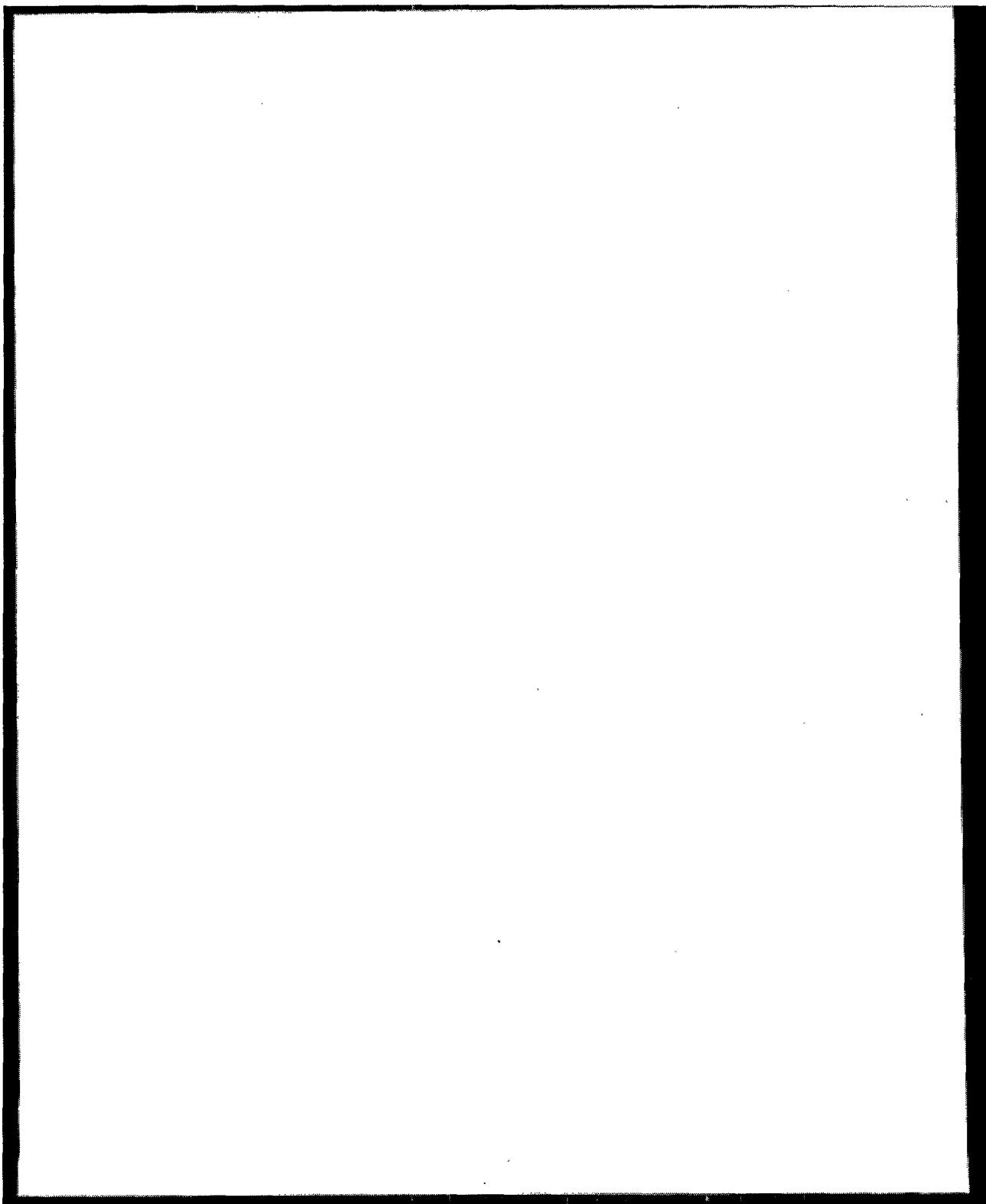
000132

PESTICIDE CROSS-REFERENCE TABLE

- R Restricted Use: The pesticide has been classified as a Restricted Use Pesticide under 40 CFR Part 1, Subpart 1. It is therefore restricted to use by a certified applicator, or by or under the direct supervision of a certified applicator.
- U Unsupported: The producer(s) of the pesticide has not made or honored a commitment to seek reregistration, conduct the necessary studies, or pay the requisite fees for reregistration of the product.
- C Canceled: The active ingredient is no longer contained in any registered pesticide products.
- NR Not Registered for use in the United States
- H In Hawaii both dichloropropane and 1,2-dichloropropane appear in the data.

APPENDIX I-15

000133

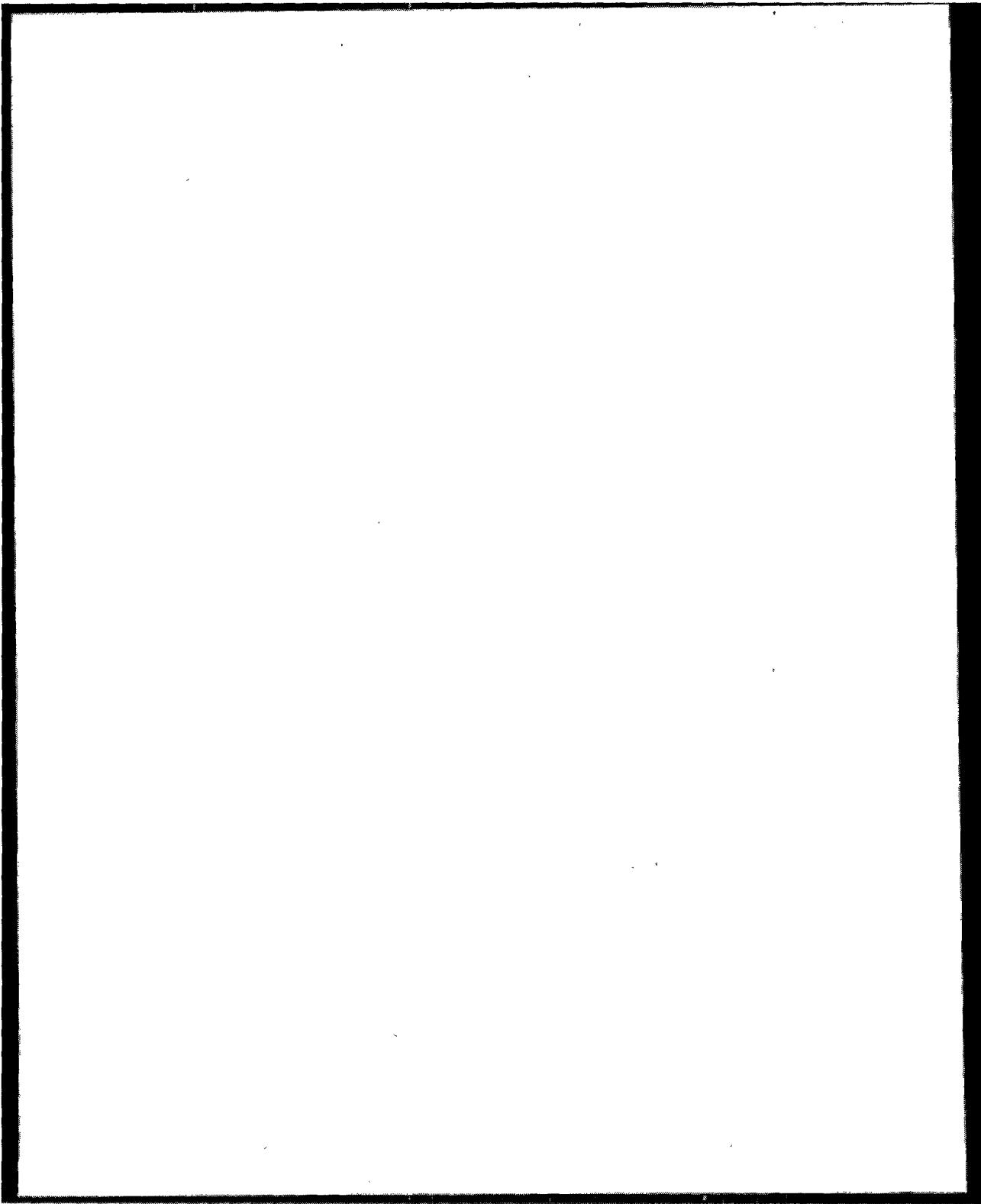


000134

Pesticides in Ground Water Database - 1992 Report

**APPENDIX II - NATIONAL SURVEY OF PESTICIDES IN DRINKING
WATER WELLS**

000135



000136

NATIONAL SURVEY OF PESTICIDES IN DRINKING WATER WELLS

At this time the Pesticides in Ground Water Database does not contain data from the National Survey of Pesticides in Drinking Water Wells (NPS). These data have been recently analyzed and published.³ OPP is currently working on importing the results of the pesticide analyses, so that they will be available when the PGWDB becomes part of the Pesticide Information Network. The following is a short description of the NPS and a summary of findings from the NPS.

The NPS is a joint project of EPA's Office of Drinking Water and Office of Pesticide Programs. This survey is the first national study of pesticides, pesticide degradates and nitrate in drinking water wells. The Survey has two principal objectives: 1) to determine the frequency and concentration of pesticides and nitrate in drinking water wells nationally; and 2) to improve EPA's understanding of how the presence of pesticides and nitrate in drinking water wells is associated with patterns of pesticide use and the vulnerability of ground water to contamination. The focus of the Survey was on the quality of drinking water in wells, rather than on the quality of ground water, surface water or drinking water at the tap. The Survey was designed to yield valuable information on both the frequency and levels of pesticides, pesticide degradates and nitrate in rural domestic (private) and community (public) drinking water wells on a nationwide basis. The Survey was not designed to provide an assessment of pesticide contamination in drinking water wells at the local, county or State level.

More than 1300 wells were sampled, some in each State, for 127 analytes. Nitrate was the most commonly detected analyte in these wells. Based upon the NPS results EPA estimates that nitrate is present at or above the analytical minimum reporting limit of 0.15ug/L in about 52.1% of community wells, and 57% of rural wells nationwide.

The survey detected pesticides and pesticide degradates much less frequently than nitrate. Twelve of the 126 pesticides and degradates were found in the sampled wells. EPA estimates that 10.4% of community wells and 4.2% of rural domestic wells in the United States contain pesticides or pesticide degradates at or above the analytical minimum reporting limit. The two most commonly found pesticides were DCPA acid metabolites (degrade of dimethyl tetrachloroterephthalate) and atrazine. The following is a list of the pesticides found in each type of well in alphabetical order.

Community: atrazine, DCPA acid metabolites, dibromochloropropane, dinoseb, hexachlorobenzene, prometon, simazine.

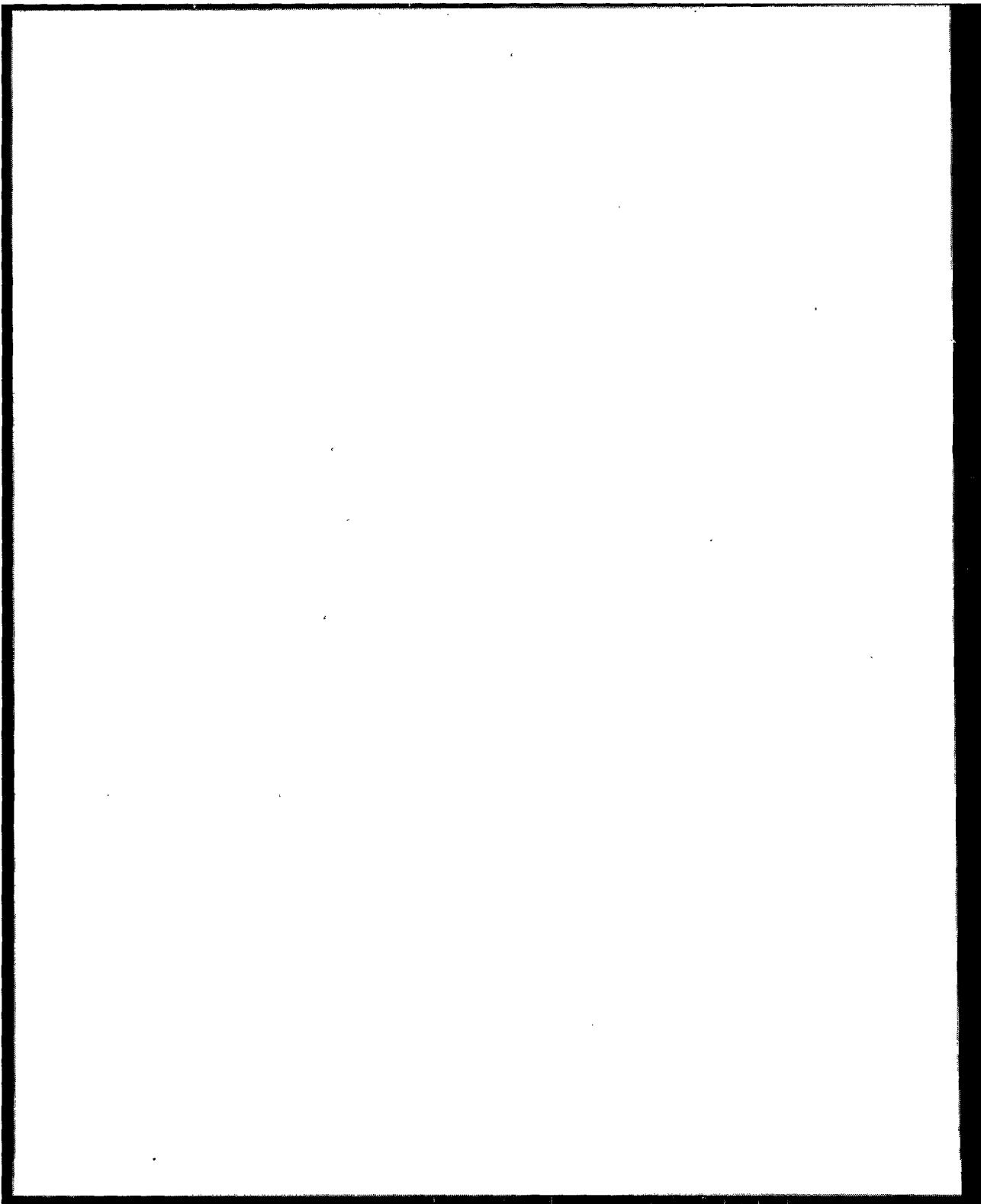
Rural Domestic: alachlor, atrazine, bentazon, DCPA acid metabolites, dibromochloropropane, ethylene dibromide, ethylene thiourea, gamma-BHC (lindane), prometon, simazine.

Appendix II-1

*U.S. G.P.O.:1993-348-066:80183

U.S. Government Printing Office: 1993 — 212-10000051

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